No. XV.—COLEOPTERA, LAMELLICORNIA AND ADEPHAGA.

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(With Plate **12** and 1 Text-figure.)

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This paper is an account of the Lamellicorn and Adephagous Coleoptera of the islands of the Western Indian Ocean visited by the Percy Sladen Trust Expedition in 1905 and 1908—9; *i.e.* the Seychelles, the Chagos, the Amirantes, the Farquhar Group, and Aldabra with the neighbouring islands of Astove, Assumption and Cosmoledo. It is mainly the result of the study of the collections formed by that expedition. But mention is also made of those species which were found in these islands by earlier collectors, and not by the Percy Sladen Trust Expedition; these are included in their proper systematic position in the present paper, so that it may be a complete list of the known fauna of the islands up to date. The total number of Lamellicornia and Adephaga known from these islands previous to the expedition was 32 species; this total is now increased to 55 species, and 9 of the additional 23 are new to science.

As regards the general nature of the fauna and affinities of the species, the Lamellicornia and Adephaga are considered separately, a brief discussion of these matters being placed at the beginning of the account of each group, *i.e.* on p. 216 and p. 239 respectively.

Literature. Certain important works, constantly required in studying the Coleoptera of these islands, may be mentioned. These are the following:

Alluaud's "Liste des Insectes Coléoptères de la Région Malgache*," being volume xxi of Grandidier's "Histoire Physique, Naturelle et Politique de Madagascar" (Paris, 1900). This list gives references not only to the original descriptions of species, but also to later notes and records of their capture within the region in question. In it are included all the species collected in the Seychelles by Monsieur Alluaud himself in 1892, and those found by earlier collectors. It also includes the species collected in Aldabra and in the Seychelles in 1893 by Dr Abbott. In short, the known fauna of the islands in question up to 1900 is included in this list.

Linell, in his paper in the "Proceedings of the United States National Museum," vol. xix (1897) p. 695, gives the original account of Dr Abbott's collections mentioned above.

Two very important papers have appeared since the publication of Alluaud's "Liste." The first is Professor Kolbe's "Koleopteren der Aldabra-Inseln" (Abh. Senckenb. Ges

* In the systematic account I have abbreviated this title to "Alluaud, Liste Coléopt."

xxvi. 1902, p. 569), which includes all the species obtained in those islands by Voeltzkow in 1895, together with all others known therefrom up to that date. The second is the same author's paper on "Die Coleopterenfauna der Seychellen" (Mitt. Zool. Mus. Berlin, v. 1910, p. 1), giving an account of all the species found in the Seychelles by Dr Brauer, together with those collected there by earlier investigators. Both these papers contain important descriptions of new genera and species.

Types. As in the case of all the Entomological Collections made by the Percy Sladen Trust Expedition, a first set of specimens including the Types of all new species will be placed in the British Museum. A second set will be retained in the Cambridge University Museum.

Localities. At the end of the remarks on each species is given a list of the localities where it was found, together with dates or any further particulars when such are recorded. In these lists, the dates "1908," "1909," or "1908—9," given alone (*i.e. not* followed by any collector's name) in any item, always indicate that the material was collected by myself or by some of those who helped me while I was in the Seychelles: similarly, "1905" always indicates that it was collected by the earlier Percy Sladen Trust Expedition in H.M.S. "Sealark": in all other cases, the collector's name is placed in brackets at the end of the item. When a species is found outside the area of the Expedition, the locality-list is followed by a brief summary of the external distribution.

I desire to express my indebtedness to a number of gentlemen who have given me very valuable assistance. Monsieur P. Lesne has very kindly compared a number of specimens with species in the Paris Museum, and I have also to thank Dr A. Sicard for taking several species to Paris for purposes of comparison. Herr A. Schmidt has examined several species of Aphodiini, on the generic position of which I was unable to decide without his assistance. Professor Kolbe has helped me in dealing with certain Carabidæ, as has also Dr W. Horn in connection with the *Cicindela*: and Mr G. J. Arrow has given me his aid in the determination of a number of the Lamellicornia. Lastly I have to thank Dr Sharp for much general assistance. Several other acknowledgements of help are given below in connection with particular species.

LAMELLICORNIA.

25 species of Lamellicornia are enumerated in this paper as having been found in the various groups of islands visited by the Percy Sladen Trust Expedition in 1905 and 1908—9. 23 of these were actually obtained by the Expedition: the remaining 2 species (*Rhyssemus goudoti* and *Lonchotus astovensis*) have been previously recorded, but were not found by the Expedition. Previously to the Expedition, 15 species were known from these islands: 10 are now recorded for the first time, and 5 of these are new to science, while for one new species it has been necessary to erect a new genus (*Nesohoplia*). The 25 species are representative of 19 genera. The Lucanidæ are represented by 2 species of *Figulus*, the Scarabæidæ as follows: Aphodiini, 9 species representing 5 genera; Orphnini, 1 species; Dynastini, 3 species representing 3 genera;

Melolonthini, 4 species representing 3 genera; Rutelini, 2 species representing 2 genera; Cetoniini, 4 species representing 4 genera.

The distribution of the 25 species will be considered under two heads: firstly, the internal distribution, or distribution among the various groups of islands within the area of the Expedition: secondly, the external distribution, or distribution outside that area, and the general affinities of the species.

Distribution within the area of the Expedition.

Before considering this, certain features of the various groups of islands must be briefly recalled. The Seychelles differ from all the other groups in being very mountainous islands of granitic formation, with luxuriant and highly peculiar indigenous forests remaining in the higher parts of the mountains. All the other groups consist of low islands of coral formation; of them, the Chagos Group is by far the Easternmost, and nearest to Ceylon and India; the Amirantes lie very close to the Seychelles; while the islands of the Aldabra Group (Aldabra, Assumption, Astove, and Cosmoledo) lie farthest to the South-West, and are distinguished from the rest by their nearness to Madagascar, from which country also the flora of Aldabra is largely derived.

The following table is designed to show the distribution of Lamellicornia within the area of the Expedition, 5 groups of islands having to be taken into consideration for this purpose.

Before the names of the species:

* indicates that the species is new to science,

† indicates that the species is recorded from these islands for the first time.

	Seychelles Group	Chagos Group	Amirantes Group	Farquhar Group (incl. St Pierre and Providence)	Aldabra Group (incl. Aldabra, Astove, Assumption and Cosmoledo)
Figulus striatus	—				—
*Figulus seychellensis	—				
Aphodius lividus	—				
Aphodius nigritus	—				
*Oxyomus palmarum	—				
*Atænius lodoiceæ	—				
†Atænius frater	—				
Saprosites laticeps	—	—			
†Saprosites pygmæus	—				
Rhyssemus goudoti	—				
†Rhyssemus ritsemæ	—				
Phæocrous insularis					—
Lonchotus astovensis					—
†Temnorrhynchus truncatus					—
Oryctes monoceros	—		—		
*Nesohoplia senecionis	—				
†Comaserica granulipennis					—
Perissosoma ænescens	—				
*Perissosoma grande	—				
Parastasia coquereli	—				
Adoretus versutus	—	—			
Oxycetonia versicolor	—	—	—	—	
Protætia aurichalcea	—		—		
Oxythyrea aldabrensis					—
Mausoleopsis aldabrensis				—	—

Summarizing the above: 19 species were found in the Seychelles; 12 of these were found *only* in the Seychelles proper, 2 in the Seychelles and also in the Amirantes, 2 in the Seychelles and also in the Chagos, while 1 ranges over the Seychelles, Amirantes, Chagos, and Farquhar Groups. 7 species were found in the islands of the Aldabra Group; 5 of these were found only in that group, 1 was found also in the Farquhar Group, and only 1 was found both in Aldabra and in the Seychelles, and that one species is represented in the latter group by a distinct variety.

External distribution.

In discussing the affinities of the species and their distribution outside the area of the Expedition, it is convenient to treat of them under two heads, namely (A) species found in the Seychelles, including under this head both those occurring only in the Seychelles and those which occur also in other groups of islands; and (B) species found in the Aldabra Group (including those which occur also in certain other of the islands).

A. Seychelles. The Lamellicorn-fauna may be divided into the following classes:

(i) Endemic forms, which may be further subdivided into:

(a) species belonging to genera known only from the Seychelles: *Nesohoplia senecionis*, *Perissosoma œnescens*, *Perissosoma grande*;

(b) species belonging to very widely-distributed genera, but (so far as is known) not closely-related to their congeners in surrounding lands: *Figulus seychellensis*, *Oxyomus palmarum*, *Atœnius lodoiceæ*.

(ii) Species peculiar to the Seychelles, but representative of a widespread oriental genus: *Parastasia coquereli* (closely-related to the Ceylon species *Parastasia basalis* Cand.).

(iii) Madagascar-Mascarene species: *Figulus striatus* (represented in Seychelles by a distinct variety), *Saprosites laticeps*.

(iv) Species common to Africa and Madagascar: *Aphodius nigritus*, *Rhyssemus goudoti*.

(v) South-Asiatic species, which extend their range also into Madagascar and the Mascarenes: *Oxycetonia versicolor*, *Protœtia aurichalcea*.

(vi) African species (not ranging into Madagascar): *Oryctes monoceros*.

(vii) Very widely-spread species: *Aphodius lividus* (cosmopolitan), *Atœnius frater* (known from West Indies and Singapore), *Rhyssemus ritsemæ* (West Africa, with a variety in the East Indies), *Saprosites pygmæus* (Malay Archipelago and Sandwich Islands), *Adoretus versutus* (spread over oriental region to Fiji, and known also from St Helena).

It is important to notice that the endemic forms were for the most part found exclusively in the native mountain-forests among the endemic vegetation: in particular *Nesohoplia senecionis*, *Oxyomus palmarum* and *Atœnius lodoiceæ*, all appear to be specially attached to certain endemic plants (see pp. 225, 226, 232). On the other hand, nearly all the Southern Asiatic, African, and Madagascar species, which have extended

their range not only to the Seychelles but also to some of the other archipelagoes such as the Chagos and the Amirantes, were not found at all in the endemic forests of the Seychelles, but only in the cultivated lower country. This is very marked in such a case as that of the Cetoniine *Protætia aurichalcea*, an Indo-Cingalese species, found also in the Mascarene Islands; it is found in low cultivated plantations in the Seychelles, and on the low coral-islands of the Amirantes. Such a species in no way belongs to the true endemic fauna of the Seychelles. The same statements apply to the very widely-spread species of class (vii). This division of the Seychelles Lamellicorn-fauna into an endemic portion confined to the endemic forests in the mountains, and a non-endemic portion found in the lower lands, is only in accordance with the condition of things (so far as at present known) throughout the whole of the Coleopterous fauna—and indeed throughout many, if not all, other parts of the Insect-fauna—of the Seychelles. Professor Kolbe has remarked on it in the introduction to his paper on "die Coleopteren-fauna der Seychellen" in the following words: "Gerade in den abseits gelegenen waldigen Teilen dieser Inseln wurden von Brauer die meisten neuen Gattungen und Arten gefunden. Im Gegensatze hierzu fanden sich die kosmopolitischen, indischen, und madagassischen Elemente in dem kultivierten Teile der Insel Mahé*." There are of course exceptions, even among the Lamellicornia, to this sharp division of the faunas of the forests and of the cultivated country. For instance the two species of *Saprosites*, neither of which is endemic, occur both in the cultivated country and in the endemic forests: and the same may be said of *Figulus striatus*. But on the whole the rule holds good.

It is seen then that the Lamellicorn-fauna of the Seychelles has an endemic element consisting of species almost confined to the forests: that it has received an element from each of the nearest large land-areas, *i.e.* Africa, Madagascar, and Southern Asia: and that it also contains a portion consisting of very widely-distributed species.

By whatever method the non-endemic forms reached the Seychelles, whether by way of ancient land-connections or by some form of transport across the sea, at any rate certain of them appear to have been isolated in these islands long enough to develop into forms which are distinct, though closely related to some of their congeners. In this connection *Parastasia coquereli* is particularly interesting; it has been discussed by Professor Kolbe on p. 5 of his paper referred to above.

The genus *Parastasia* is represented by a number of species in the Indian region, and extends over the East Indian Archipelago, reaching to New Caledonia and New Zealand. *P. coquereli* in the Seychelles appears to be the Westernmost outpost of the genus: it is closely-related to, but yet distinct from, *P. basalis* Cand., a species found in Ceylon and India. Kolbe (*l.c.*) enters briefly into the question whether *Parastasia* originally reached the Seychelles by immigration across the sea, or by an old land-connection. The Madagascar-Mascarene species *Figulus striatus* also is represented in the Seychelles by a distinct form, though in this case the difference appears insufficient to justify its being designated as more than a variety.

* Mitt. Zool. Mus. Berlin, v. 1910, p. 4. The portion cited above is followed by the statement that the non-endemic elements form the greater part of the Seychelles fauna. Whether this latter statement will hold true when the collections formed by the Percy Sladen Trust Expedition are fully worked out, is doubtful.

Some of the very widespread species are probably either recent immigrants, or introduced by human agency. For example, *Aphodius lividus*, *Aphodius nigritus*, *Atænius frater*, and *Rhyssemus ritsemæ* are (as far as my experience goes) only found in the low cultivated country, feeding on the excreta of domestic animals: but under purely natural conditions there would have been no such excreta for them to feed on in the islands. *Adoretus versutus* also is chiefly found in gardens near the coast, among rose-bushes (on which it feeds) and other totally non-indigenous vegetation.

B. Aldabra Group. The Lamellicornia consist of 7 species. Of these, *Figulus striatus* is a Madagascar-Mascarene species, found also in the Seychelles, though represented there by a distinct variety; the specimens from Aldabra are of the typical Mascarene form. *Phæocrous insularis*, originally described from Aldabra, has since been recorded from Madagascar. *Temnorrhynchus truncatus* and *Comaserica granulipennis* are both Madagascar species, the latter belonging to a genus which is confined to Madagascar. The genus *Lonchotus* is also confined to Madagascar with the exception of *Lonchotus astovensis*, known only from Astove Island and not (hitherto) from Madagascar itself. Lastly, the 2 species of Cetoniini are both allied to African forms. *Mausoleopsis aldabrensis* has actually been found in Wasin Island on the coast of British East Africa, and it is so closely related to *Mausoleopsis selika* Raffray that it has been considered by Kolbe to be merely a variety of that species. *Oxythyrea aldabrensis* is allied to a South African species (*Oxythyrea marginalis* Swartz): *Oxythyrea* has representatives in Madagascar, the Comoros, and Glorioso Island.

Thus, the Aldabra Lamellicorn-fauna is entirely distinct from that of the Seychelles: its strongest affinities are with Madagascar, as might be expected from the proximity of that country: but it contains an African element in the shape of the two Cetoniini. 3 of the forms, however,—the two Cetoniines and the *Lonchotus*—are *specifically* distinct; but one of these (*Mausoleopsis*) is known to be not entirely confined to the Aldabra group, while there is the possibility that the other two may be found outside those islands.

The distribution of Cetoniini among the groups of islands visited by the Expedition is interesting. The 4 species appear to fall into two little sets of 2 species each. On the one hand, in the Northernmost and Northeasternmost groups, the Amirantes, Seychelles, and Chagos, are two South-Asiatic species (*Oxycetonia versicolor* and *Protætia aurichalcea*), which also extend into the Mascarene Islands and Madagascar. On the other hand, in the Southwesternmost of the islands, those of the Aldabra Group, are two species of strongly African affinities. In the Farquhar Group of islands the two sets of species meet, for specimens of both the South-Asiatic *Oxycetonia versicolor* and of the African *Mausoleopsis aldabrensis* have been found there.

Condition of the wings. This has been investigated in many of the species of Lamellicornia, and in no case has any trace of reduction or atrophy of these organs been found.

Lucanidæ.

FIGULUS MacLeay, Horae Ent., i. 1819, p. 110.

1. *Figulus striatus* (Olivier).

Lucanus striatus Olivier, Ent., i. 1. 1789, p. 19, Pl. IV, fig. 14.

Figulus striatus Alluaud, Liste Coléopt., p. 298; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

30 specimens were obtained in the Seychelles and 3 in Aldabra. I have also examined in the British Museum some older specimens from the Seychelles, a number from Mauritius, and 2 from Réunion. The material thus examined falls into two distinct groups as follows:

A. *Specimens from the Seychelles.* The thorax is very smooth and very little punctured. The punctures on its lateral portions are so very fine as to be hardly visible without a high power. The median longitudinal punctured area is little impressed, and does not reach to the anterior and posterior margins of the thorax, but is obliterated in front over nearly $\frac{1}{3}$ the length of the thorax and to a less extent behind. (The specimens were obtained at different dates and in several different islands of the Seychelles group.)

B. *Specimens from Aldabra, Mauritius and Réunion.* Lateral portions of the thorax fairly strongly punctured, this character being specially marked in the 3 specimens from Aldabra. Median longitudinal punctured area reaching almost if not quite to the anterior and posterior margins; in the specimens from Mauritius it is markedly impressed. Punctuation of the elytral sulci slightly stronger. The specimens from Aldabra have the head more strongly punctured.

Form A may be said to be characterised by reduction of punctuation in comparison with form B. I have been unable to find other characters separating the two forms. The basal part of the ædeagus* varies in breadth, but not (as far as I have seen) in such a way as to divide form A from form B. External sexual differences are not conspicuous: the mandibles are usually larger in the ♂, but the sexes cannot always be determined without dissection. In both sexes the left mandible has 2 rather blunt teeth, the right mandible only 1 (this computation includes neither the apex of the mandible nor a blunt protuberance at its base). The wide head with its margin distinctly sinuate in front of either eye is characteristic. The length (incl. mandibles) in my Seychelles specimens ranges from $13\frac{3}{4}$ to $17\frac{1}{2}$ mm.: an immature specimen from Aldabra reaches only 11 mm.

* The ♂ genital apparatus in *Figulus striatus* possesses a long thin membranous flagellum. This is not present in *F. seychellensis*, nor in some specimens from the British Museum which I refer to *F. marginalis* Ritsema. Judging from this very important difference, Mr F. Muir and Dr Sharp, both of whom examined the specimens, consider that probably the present genus *Figulus* should be divided. All species of the genus, however, would have to be examined for this character before a division could be satisfactorily made; and until this is done it seems best in a faunistic paper like the present to include both *striatus* and *seychellensis* under the name *Figulus*.

Loc. Seychelles. Mahé: Cascade Estate. Silhouette: from decayed outer leaf-bases of wild palm in high forest, IX. 1908; from fallen and decayed branch in forest above Mare aux Cochons, 8. IX. 1908, 1 imago, 1 pupa and several larvæ; 1 ♀ bred from pupa, IX. 1908; &c. Praslin: from decayed tree-stem in Coco-de-Mer forest, Côtes d'Or Estate, 10 specimens, XI. 1908; 3 specimens, 1905. Previously found in Mahé by Brauer (Mamelles plantation) and Allnaud.

Aldabra: Takamaka, X.—XII. 1908, 1 ♂, 1 ♀, and 1 immature specimen (Fryer). Mauritius, Réunion, Madagascar.

2. *Figulus seychellensis*, sp. nov.

Sat angustus, parallelus, niger; mandibulis unidentatis; capite grosse haud profunde, ad marginem anteriorem subtilius, punctato, in medio excavato, inter oculos postice tuberculis 2 punctatis, antice tuberculis 2 impunctatis, margine anteriore sinuato, canthis oculorum ante oculos distincte sinuatis; prothorace quadrato, circa $\frac{1}{6}$ latiore quam longo, lateribus postice crenulatis, angulis anticis parum, posticis conspicue, rotundatis, antice in medio tuberculato, disco sulco medio fortiter punctato antice abbreviato, utrinque in medio fere impunctato sed ad latera fortiter sat dense punctato; elytris punctato-striatis, striis internis haud fortiter punctatis, dente humerali parvo, haud prominente; tibiis anticis ♂ et ♀ similibus (♂ haud ad basin calcaris dilatatis). Long. corp. (cum mandib.) 9—9½ mm.

A small, rather narrow, parallel-sided, shining-black form. Mandibles slightly curved, each with one tooth on the inner margin rather near the base, and with the actual apex blunt. The head bears 4 obsolete tubercles, 2 near the base between the eyes, and 2 impunctate ones situated just in front of the inner margin of the orbit. With the exception of these anterior tubercles the head is punctured, the punctures being large but shallow, and becoming much finer and closer near the anterior margin. The margin of the ocular canthus is distinctly sinuate in front of the eye, and the posterior angle of the canthus is very obtuse. The prothorax is a little broader than long, with the front angles slightly and the hind angles more widely rounded off; the lateral margins bear fine crenulations towards the hind angles; there is a small tubercle in the middle of the front margin; the median longitudinal impressed and punctured line does not reach quite to the front margin; on either side of this the inner part of the disc is smooth and bears only extremely fine punctures, but the lateral parts are strongly punctured. The elytra are strongly striate, but the striæ (especially those near the suture) are not at all strongly punctured; the interstices are rather flattened; the humeral angle is very slightly toothed. The metasternum and first 4 ventral segments bear large punctures laterally, but are smooth with only a few extremely fine punctures in the middle; 5th ventral segment with large punctures, especially near the margin. The length (including that of the mandibles) is from 9—9½ mm.; one specimen, bred in captivity from a larva, is only 6¾ mm. I have 5 specimens.

I have only been able to distinguish the sexes by dissection. In *F. marginalis* Ritsema* the male has an abrupt and conspicuous semicircular dilatation on the inner

* Ritsema described *F. marginalis* in Notes of the Leyden Museum, vol. i. 1879, p. 189, and added a note about the difference of the ♂ tibiæ in the same publication, vol. xvii. 1895—6, p. 138.

side of the anterior tibiæ at the base of the spur, and the spur itself is thickened and curved. The male is thus readily distinguished from the female; but in *F. seychellensis* there is no such distinction, the tibiæ of the male having no dilatation and the spur being similarly formed in both sexes.

Monsieur H. Boileau, who kindly examined specimens of *F. seychellensis*, gave it as his opinion that the species is new. It bears a certain resemblance to the Indo-Malayan *F. marginalis*, of which I have examined the type and another specimen. The form of the head is however quite different; in *F. marginalis* the ocular canthi are scarcely sinuate in front of the eyes, and the striæ of the elytra are much more strongly punctured: also in the specimens which I have seen, the posterior angle of the canthus is much less obtuse and the angles of the thorax are much less rounded off. *F. marginalis* also has the above-mentioned secondary sexual difference in the tibiæ. Monsieur Boileau mentions that he has two specimens of a *Figulus* from Benito, Portuguese Congo, which are much more closely-allied to *F. seychellensis*, but at the same time quite distinct from it.

Loc. Seychelles. Silhouette: forest above Mare aux Cochons, over 1000 ft., IX. 1908, 1 ♂ and 1 ♀ from a decaying branch of "Bois Rouge" (*Wormia ferruginea*), also a third (very small) specimen bred from a larva found in a decaying branch of the same tree. Mahé: Cascade Estate, 800—1000 ft., I. 1909, 2 specimens (1 ♀ and 1 of undetermined sex).

Scarabæidæ.

Aphodiini.

Aphodius Illiger, Käf. Preuss., 1798, p. 15.

3. *Aphodius lividus* (Olivier).

Scarabæus lividus Olivier, Ent., i. 3. 1789, p. 86, Pl. 26, fig. 222.

Aphodius lividus Alluaud, Liste Coléopt., p. 240; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

9 specimens.

Loc. Seychelles. Mahé: from low country on the main island, and from Anonyme Island, 1908—9; cultivated country (Brauer). Previously recorded from Seychelles by Fairmaire. Cosmopolitan.

4. *Aphodius nigritus*, Fabricius.

Aphodius nigritus Fabricius, Syst. Eleuth., i. 1801, p. 73; Alluaud, Liste Coléopt., p. 240; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

15 specimens.

Loc. Seychelles. Dennis Island, 1908 (Fryer): Silhouette, 1908: Félicité, from a coconut-plantation, XII. 1908: Mahé, cultivated country on main island, 1908—9, and Long Island, VII. 1908; cultivated country (Brauer): La Digue (Alluaud). Madagascar, Mascarene Islands, Tropical East Africa.

Oxyomus Castelnau, Hist. Nat. Col., ii. 1840, p. 98.

5. *Oxyomus palmarum*, sp. nov. (Pl. **12**, fig. 1, and Text-fig. 1.)

Piceus, antennis pedibusque ferrugineis, nitidus; capite antice obsolete, postice sat dense, punctulato; prothorace dense subrugose punctato; elytris longitudinaliter carinatis, carinâ quâque alterâ fortius, carinâ quâque intermediâ parum, elevatâ, interstitiis grosse haud profunde sculpturatis. Long. corp. 3 mm.

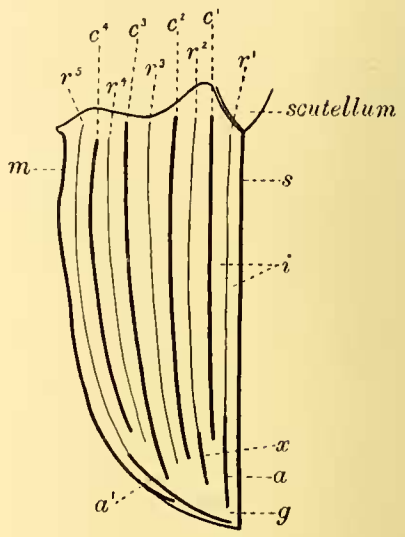

Fig. 1. Diagram of elytron of *Oxyomus palmarum*: explanation in text.

It is very difficult either to describe or to represent in a figure the remarkable sculpture of this insect. Head slightly elevated in the middle, rather densely punctured in the basal portion, the punctuation becoming obsolete in front. Thorax with a very dense subrugose punctuation, a compound microscope showing very fine punctures in the spaces between the large ones; the sides are slightly explanate towards the anterior angles, and only a faint trace of a median longitudinal depression is sometimes visible. The elytral sculpture can only be properly made out if an elytron is removed and mounted separately; it will be best understood by reference to Text-figure 1, which represents the elytron diagrammatically so that all parts of it are seen at once. Between the sutural and outer margins (*s* and *m*), both of which are elevated, are four well-marked longitudinal *carinæ* (c^{1-4}); down the middle of each *interval* between these *carinæ* runs a much less elevated longitudinal *ridge* (r^{1-5}), dividing the interval into two *interstices* (*i*); each *interstice* is curiously sculptured, bearing a longitudinal row of shallow punctures connected with one another by a shallow groove. Thus the elytron bears a number of longitudinal elevations, the alternate ones being developed into strongly-marked *carinæ*, while the intermediate ones remain as the much less elevated *ridges*. *Carinæ* 1, 2, 3 and 4 are not continued to the apex of the elytron: near the apex the two *ridges* (r^1 and r^5), intervening respectively between the sutural margin and *carina* 1, and between the outer margin and *carina* 4, become themselves developed into strong *apical carinæ* (*a* and a^1); a^1 curves round the apex of the elytron so that it almost meets *a*, the two being separated by a slight interruption at *g*; a^1 projects so much that it renders the true margin of the elytron very hard to see at the apex. A short carination (*x*) is also present near the apex on the ridge intervening between *carinæ* 1 and 2 (r^2). Elytron $1\frac{3}{4}$—2 mm. long, wing about 3 mm. long. Mesosternum closely punctate in front, the narrow part between the middle coxæ keeled. Metasternum with its central portion elevated, smooth, almost impunctate, rather strongly impressed, sloping on either side down to the impressed median longitudinal line; lateral parts finely subrugose. Abdominal segments smooth with very few fine punctures, except at the base, where each has a transverse series of

large shallow punctures separated by rugæ: segments 1 and 2 have a sharp median longitudinal keel. Tarsal claws minute and equal.

The variation appears to be very slight; two specimens are yellow instead of pitchy owing to immaturity. *O. cameratus* Schmidt, of which I have seen specimens from S. India in the British Museum, has sculpture of the same general type as, but in details very different from, that of *O. palmarum*: the elytral keels of *O. cameratus* are all equally developed, and special apical carinæ are absent.

Loc. Seychelles. The specimens, of which I collected 106, were found only in the endemic forests of Silhouette and Mahé, and *exclusively in the moist humus between the bases of the leaves of precinctive species of palms and Pandanus**: not between the decayed outer leaves, but between the inner and living ones. By far the greater number were taken from the palm *Stevensonia grandifolia*, 35 in one case being obtained from a single tree: only a small number were found in the palm *Verschaffeltia splendida*, only 2 in a *Pandanus*, and none in any other kind of tree but these three kinds. Possibly the whole life-cycle takes place in the trees, for 4 very small Lamellicorn larvæ found between leaf-bases of a growing *Stevensonia* in the same place and on the same day as the "35 specimens from a single tree," must almost certainly belong to this species. Of the 106 specimens, 99 are from Silhouette; possibly this is due to several causes; collecting in Silhouette was done in the drier months of August and September, that in Mahé from October to March. The following is a detailed list of the finds:

Silhouette: from 5 different growing *Stevensonia*-palms in damp forest near Mt Pot-à-eau, 1500—2000 ft., VIII. 1908, 8 specimens; from felled *Verschaffeltia* in forest just above Mare aux Cochons, 26. VIII. 1908, 1 specimen; from two heads of a growing *Pandanus sechellarum*, forest above Mare aux Cochons, 22. IX. 1908, 2 specimens; from a single growing *Stevensonia*, same place and day as preceding, 35 specimens; from another growing *Stevensonia*, same part of forest, 24. IX. 1908, 25 specimens; from various other palms (*Stevensonia* or *Verschaffeltia*), forest above Mare aux Cochons, 28 specimens.

Mahé: from a growing *Verschaffeltia* near Morne Blanc, about 800 ft., 19. XI. 1908, 1 specimen; from a palm (either *Stevensonia* or *Verschaffeltia*) in Cascade forest, II. 1909, 1 specimen; from a large *Stevensonia* in Cascade forest, 29. XII. 1908, 5 specimens.

ATÆNIUS Harold, Coleopt. Hefte, ii. 1867, p. 100.

6. *Atænius lodoiceæ*, sp. nov. (Pl. 12, fig. 2).

Piceus, antennis pedibusque ferrugineis, subopacus; capite dense subtiliter parum subrugose, ad marginem anteriorem sat obsolete, punctato; prothorace dense subtiliter parum subrugose punctato; elytro singulo 8-carinato, carinis sat elevatis, interstitiis regulariter punctatis subtilissimeque rugulosis, ad apicem carinâ in interstitio externo abrupte elevatâ, ultra marginem elytri prominente. Long. corp. circa 3 mm.

Head and thorax a little shining, elytra rather dull. Head densely and finely

* For a list of the animals found between these leaf-bases see the writer's paper in Trans. Linn. Soc. London, Ser. 2 (Zool.), vol. XIV, 1910, pp. 24—5; and compare the case of *Copelatus pandanorum*, discussed on pp. 259, 260 of the present paper.

punctured, except near the front margin, where the punctuation becomes somewhat obsolete. Thorax densely and finely punctured, a high power showing very small punctures scattered between the larger ones; very little explanate at the sides towards the anterior angles. The elytral sculpture is analogous to that of *Oxyomus palmarum*, with which it may be compared. Each elytron has 8 longitudinal *carinæ* in addition to the elevated sutural and outer margins: but they are only moderately elevated and almost equally developed throughout; only on the sloping outer part of the elytron is there a faint trace of the alternate ridges being more elevated than those between them, a condition which is carried to so high a pitch of development in *O. palmarum*. *Interstices* regularly punctured, a shallow groove running from puncture to puncture as in *O. palmarum*; the surface of the interstices on either side of the punctures is minutely rugulose. Interval between the 8th carina and the outer margin broad, corresponding to two interstices, between which there is no definite carina except near the apex, where a sharply-elevated *apical carina* is developed. This *apical carina* curves round the apical part of the elytron so that it almost meets the end of *carina* 1 (nearest the suture), and it projects so much as to render the true apical margin of the elytron hard to see. *Carinæ* 2—8 are of different lengths, terminating before the apex of the elytron. Length of elytron about $1\frac{3}{4}$ mm., of wing about $2\frac{3}{4}$ mm. Mesosternum closely punctured in front, the part between the middle coxæ keeled. Central part of metasternum somewhat elevated and finely punctured, only slightly impressed in the middle, much flatter than in *O. palmarum*. Abdominal segments finely punctured. Claws of tarsi minute, equal.

Loc. Seychelles. 8 specimens: 7 were found between the bases of the leaves of a growing ♂ Coco-de-Mer palm (*Lodoicea sechellarum*), which was felled and examined 28. XI. 1908, in the Coco-de-Mer forest in the Vallée de Mai, Côtes d'Or Estate: the 8th specimen was found in the same locality on the same date, but whether from a palm-tree is not specified.

7. *Atœnius frater*, Arrow.

Atœnius frater Arrow, Trans. Ent. Soc. London, 1903, p. 512.

This species was described from a series obtained in St Vincent and Grenada (W. Indies). It has since been found to occur also in the East, a specimen from Singapore being in the British Museum. I obtained two specimens in Mahé which agree closely with those from the West Indies. In this species and the allied *A. strigicauda* Bates a high-power lens reveals the existence of a network of extremely fine striæ between the punctures on the thorax.

Loc. Seychelles. Mahé: Cascade Estate; low country; neither specimen is from the endemic mountain-forests. Also W. Indies and Singapore.

Saprosites Redtenbacher, Faun. Austr., 2 ed. 1858, p. 436.

8. *Saprosites laticeps* (Fairmaire).

Psammodius laticeps Fairmaire, Ann. Soc. ent. France, ser. 5, i. 1871, p. 34.

Saprosites laticeps Alluaud, Liste Coléopt., p. 241; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

41 specimens. Fairmaire in the original description stated the colour to be "d'un brun rougeâtre assez brillant." Alluaud writes of the species (Bull. Soc. Zool. France, 1898, p. 66) as "entièrement d'un noir de poix." Almost all my specimens are shining pitchy black, with the anterior and lateral margins of the head, the legs, antennæ, and sometimes the anterior margin of the thorax, reddish-brown: a few specimens are a little lighter altogether, dark reddish-brown instead of black. The head is finely and evenly punctured. The punctuation of the prothorax seen under a high power is characteristic; near the anterior margin it is very finely punctured, and the rest of its surface bears strong punctures irregularly placed, with very fine punctures between them. Fairmaire describes the prothorax as having a scarcely distinct median longitudinal furrow; this is only visible at all in a few of my specimens, and even then is very indistinct. Elytra rather deeply crenate-striate. I have examined the wing in one specimen and found it to be about $1\frac{3}{4}$ times as long as the elytron. Metasternum punctured at the sides, with only extremely fine and somewhat rare punctures in the middle, and with a marked impressed median longitudinal line; abdominal sterna each bearing a transverse series of rugæ at its base, otherwise smooth with only extremely fine punctures. Length $2\frac{1}{2}$—3 mm.

Loc. Seychelles: all the specimens obtained by me are from Silhouette, and as in the case of the following species, some are from the endemic mountain-forest, others from the low plantation-country; forest above Mare aux Cochons, IX. 1909, 21 specimens: low coconut-planted country near the coast, Pointe Étienne, 17. IX. 1908, 12 specimens: La Digue, 1892 (Alluaud). Chagos Islands: Egmont Atoll, 1905; this is the first record from this archipelago. Mauritius, Madagascar.

9. *Saprosites pygmæus*, Harold.

Saprosites pygmæus Harold, Ann. Mus. Genova, x. 1877, p. 91: Sharp, Trans. Ent. Soc. London, 1879, p. 91, and Fauna Hawaiiensis, iii. p. 402 (1908).

My best thanks are due to Dr R. Gestro for lending me Harold's type of this species from the Genoa Museum. I compared it with specimens obtained in the Seychelles, and with 5 specimens (in the British Museum Collection) from the Hawaiian Islands, previously determined by Dr Sharp as belonging to this species. The comparison showed that Dr Sharp, who had not seen the type, was correct in his determination of the Hawaiian specimens, while those from the Seychelles must also be referred to this species.

Among the 14 specimens from the Seychelles there is considerable variation in size (length 2—$2\frac{1}{2}$ mm.) and in colour; the latter is usually ferruginous, but in some cases the elytra are darker, pitchy-reddish. There is also marked variation in the degree of closeness of the thoracic punctures, though all the specimens agree in having the punctuation evenly distributed. In most of them the elytral striæ are slightly wider and more marked than in the type, and the interstices consequently appear slightly narrower and more convex. But I could find no character on which either to divide the Seychelles specimens into more than one species, or to separate them from the type.

S. pygmæus is distinguished from the other *Saprosites* found in the Seychelles (*S. laticeps*) by its smaller size, diluter colour (reddish instead of black), and by the

thoracic punctuation being even, without any mingling of large and fine punctures on the same part of the thorax.

Loc. Seychelles: from localities differing as widely as the damp endemic mountain-forests of Mahé and the much lower and drier forest on Félicité. Mahé: high forest near Morne Blanc, XI. 1908; high forest between Trois Frères and Morne Seychellois 1500—2000 ft., XII. 1908; Cascade Estate 800—1000 ft. and forest above; from between leaf-bases of a growing *Stevensonia*-palm on Cascade Estate at about 1000 ft., XII. 1908, 1 specimen: Praslin, Côtes d'Or Estate, XI. 1908: Félicité, 3 specimens from forest, XII. 1908. Key Islands, Malay Archipelago (the type, collected by Beccari). Hawaiian Islands (Blackburn).

Rhyssemus Mulsant, Coléopt. de France, Lamell., 1842, p. 314.

10. *Rhyssemus goudoti*, Harold.

Rhyssemus goudoti Harold, Coleopt. Hefte, iv. 1868, p. 85; Alluaud, Liste Coléopt., p. 241; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

Not obtained by the Percy Sladen Trust Expeditions.

Loc. Seychelles: Mahé, 1892 (Alluaud). Madagascar, N.E. Africa, Egypt.

11. *Rhyssemus ritsemæ*, Clouët.

Rhyssemus ritsemæ Clouët, Mém. Soc. ent. Belgique, viii. 1901, p. 81.

Two specimens, for the identification of which I am indebted to Herr A. Schmidt.

Loc. Seychelles. Mahé: from side of road just above beach at Port Glaud, 5. XI. 1908. The species is recorded from W. Africa (Freetown), and the var. *indica* Clouët from the E. Indies.

Orphnini.

Phæocrous Castelnau, Hist. Nat. Col., ii. 1840, p. 108.

12. *Phæocrous insularis*, Linell.

Phæocrous insularis Linell, Proc. U. S. Mus., xix. 1897, p. 699; Alluaud, Liste Coléopt., p. 244; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 575.

14 ♂, 15 ♀: there is considerable variation in size in both sexes, the length varying from 7—9½ mm. The thorax in this species is of the same form in both sexes, and is not at all explanate at the sides. The swollen terminal joints of the tarsi in the ♂ are characteristic.

Loc. Aldabra: 1908—9 (Fryer), and 1893 (Abbott). ? Seychelles: a single ♀ is labelled "Mahé" (1905), but I doubt whether a wrong label has not been attached to it. Madagascar: Kolbe (*l.c.*) had seen no specimens from Aldabra, but had seen some collected in the N. of Madagascar by Voeltzkow which agreed with the description of *P. insularis*.

Dynastini.

Lonchotus Burmeister, Handb., v. 1847, p. 173.

13. *Lonchotus astovensis*, Arrow.

Lonchotus astovensis Arrow, Ann. Mag. Nat. Hist., ser. 8, vii. 1911, p. 88.

Not obtained by the Percy Sladen Trust Expeditions.

Loc. Astove Island: 2 specimens, in Brit. Mus. (R. P. Dupont).

Temnorrhyncus Hope, The Col. Man., 1837, i. p. 93.

14. *Temnorrhyncus truncatus* (Klug).

Geotrupes truncatus Klug, Ins. Madag., Abh. Ak. Wiss. Berlin, 1832, i. p. 165.

Temnorrhyncus truncatus Alluaud, Liste Colćopt., p. 249.

There is a single specimen of this genus, a ♂, 12 mm. long. It is very small indeed for *T. truncatus*, but by comparison with that and other species in the British Museum I have not been able to find any structural character separating it from *T. truncatus*. The specimen is dark reddish-brown and strongly shining; the frontal plate is transverse, with a slight transverse carina on its lower (anterior) part, and with its upper border rounded and bearing a very obsolete tubercle at the summit; the thorax is quite impunctate, with a well-marked rounded median depression anteriorly (but with no tubercle behind this depression), and with the posterior portion very slightly depressed medially.

From its small size and general form this specimen bears a strong superficial resemblance to the W. African *T. repandus*, which species however is at once distinguished by its tall narrow frontal plate emarginate at the summit.

Loc. Assumption Island, 1909 (Dupont). Madagascar.

Oryctes Illiger, Käf. Preuss., 1798, p. 11.

15. *Oryctes monoceros* (Olivier).

Scarabæus monoceros Olivier, Ent., i. 3. 1789, p. 37, Pl. 13, fig. 122.

Oryctes monoceros Alluaud, Liste Colćopt., p. 250; Linell, Proc. U. S. Mus., xix. 1897, p. 697; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 23.

14 males, 11 females, from cultivated places; the larvæ are found in decaying stems of coconut-palms. This species (locally spoken of as "bœuf banane") is stated to be injurious both to coconut trees and bananas (see Kolbe, *l.c.*). There is great variation in both sexes in actual size, in relative proportion of length to breadth, etc.

Loc. Seychelles: Mahé, Silhouette, Praslin, Dennis Island, Frigate Island (1905 and 1908—9). Amirantes: St Joseph Island, 1905. Obtained by Abbott in Mahé and the Amirantes, and by Brauer in cultivated places in Mahé. Also Tropical Africa.

Melolonthini.

Nesohoplia, gen. nov. (Pl. **12**, figs. 3—9).

♂♀. Corpus angustum, supra squamis elongatis angustis adpressis vestitum. Clypeus haud attenuatus, margine anteriore fere recto. Antennæ 9-articulatæ. Maxillæ lobâ superiore haud robustâ, laminatâ, apice bidentato. Mentum elongatum, suboblongum, ad bases palporum vix constrictum, margine anteriore haud emarginato. Prothorax antice fortiter angustatus, angulis posticis acutis, basi medio in angulum producto. Scutellum minimum. Abdominis segmenta ventralia haud contracta. Tibiæ anticæ bidentatæ, dente proximali fere obsoleto, dente apicali obliquo; calcare nullo. Tibiæ mediæ posticæque unicalcaratæ, posticæ haud incrassatæ.

♂. Tarsi omnes unguibus 2 inæqualibus, compressis, apice fissis.

♀. Tarsi antici et medii unguibus 2 inæqualibus, apice unguis externi fisso, apice unguis interni haud fisso. [♀ Tarsi postici desunt.]

Body narrow, clothed fairly densely above (clypeus excepted) with long narrow adpressed scales.

Mentum (Pl. **12**, fig. 7) about $\frac{3}{5}$ as broad as long, suboblong, towards the base rather broader with sides rounded, not sharply constricted but with the sides only sinuate at the point of insertion of the palps, the front margin sinuate but not sharply emarginate in the middle, the anterior angles rounded and bearing hairs: apical joint of labial palpi about twice as long as the second. Maxillæ (Pl. **12**, fig. 6) with the upper lobe not very robust, a subquadrate plate with two tooth-like projections at its upper and inner angle: apical joint of maxillary palpi swollen and fusiform, nearly as long as the second and third together. Mandibles (Pl. **12**, fig. 5) with a strongly-chitinised apical tooth and a delicate inner membranaceous portion. Labrum (Pl. **12**, fig. 4) almost horizontal, broad and short, with the front margin slightly sinuate medially. Antennæ 9-jointed, 6th joint very short; the club (joints 7—9) as long as joints 2—6 taken together, the lamellæ of joints 7 and 9 convex outwardly, when closed almost concealing the slightly shorter middle lamella (joint 8). Clypeus short and somewhat broad, with its anterior margin nearly straight, not emarginate, reflexed, the angles rounded off; its surface slightly concave, with only few very small hairs, devoid of the conspicuous scaly covering of the rest of the head and body. Prothorax broader than long, strongly narrowed in front, produced in the middle of the base into an angle (covering the base of the scutellum). Scutellum very small, ovate, with apex angular. Elytra slightly narrowed behind the middle, separately rounded at the apex. Pygidium vertical, ventral abdominal segments not contracted in either sex. Middle and posterior coxæ contiguous, the posterior transverse and projecting slightly at the sides of the abdomen. Anterior tibiæ bidentate, the proximal tooth very little developed, the apical one well-developed and oblique: apical spur absent. The middle and posterior tibiæ have each a single apical spur about as long as the first tarsal joint: posterior tibiæ somewhat broader than the middle ones, but not greatly swollen or thickened as in some genera.

In the ♂ *all* the tarsi have 2 claws, both of which are cleft at the apex, the larger one specially broad and flattened (Pl. **12**, fig. 8). I have only seen one ♀, from which the

posterior tarsi unfortunately are broken off; in it the anterior and middle tarsi have each two claws, shorter and less flattened than in the ♂, the larger one rather deeply cleft, the smaller not cleft at all (Pl. **12**, fig. 9).

Type of the genus: *Nesohoplia senecionis*, sp. nov.

I feel doubt as to whether certain characters of this insect are to be regarded as generic or specific; and also as to the systematic position of the genus. According to Péringuey's classification of the S. African Hopliini (Tr. S. Afr. Phil. Soc. xii. 1901—2, p. 624) it would appear to fall into the group Scelophysides. In claw-structure and some other points it somewhat resembles *Platychelus* (see *op. cit.* pp. 798, 802), but differs from it widely in the form of the mentum and maxillæ; neither does the general form of the body seem to approach that of *Platychelus*. In superficial appearance and nature of its setose-squamose covering *Nesohoplia* somewhat resembles certain unnamed Hopliini from Madagascar in the British Museum: but from these it differs absolutely in claw-structure, etc. It does not appear to be very close to any of the various genera described from the Madagascar region; and Dr Sicard, to whom specimens were sent, informs me that he could find nothing like it in the collections from that region in Paris.

16. *Nesohoplia senecionis*, sp. nov. (Pl. **12**, figs. 3—9).

♂. Piceo-ferruginea vel picea, nitida, supra squamis pallide griseo-flavescentibus sat dense vestita; capite dense subrugose punctato; prothorace circa $\frac{1}{5}$ latiore quam longo, antrorsum fortiter angustato, angulis anterioribus fere rectis, lateribus rotundatis pone medium leviter sinuatis, angulis posticis acutis, basi medio in angulum acutum productâ, utrinque leviter bisinuatâ, disco sat dense haud profunde punctato; elytris dense subrugose punctatis, setis erectis tenuibus parcis seriatim inter squamas positis. Long. corp. 6—7 mm.

♀. Major, robustior, prothorace elytrisque minus dense punctatis. Long. corp. 8 mm.

The clypeus is clearly marked off from the rest of the head; its punctuation is slightly different, and it is almost bare, the scales (which clothe the rest of the head, and the prothorax and elytra) being represented on it only by very small fine hairs. The form of the prothorax is characteristic: its front and side margins bear erect outstanding hairs. The adpressed scales arise from the punctures, which on the thorax and elytra are fairly dense but not deep; the punctuation of the elytra is also subrugose. The elytra are slightly narrowed behind the middle; they bear in addition to the scales 2 or 3 rather irregular series of a few fine erect hairs placed far apart. Wing twice as long as the elytron. Metasternum with a slight median longitudinal depression which is absent near the anterior margin. Pygidium bearing procumbent pale yellowish hairs, metasternum and abdominal segments procumbent whitish or pale yellowish hairs. The tibiæ bear erect yellowish hairs. The single ♀ is in bad condition, most of the scaly and hairy clothing being rubbed off: it is large and dark in colour, and has the thoracic and elytral punctuation less close than in the ♂, besides differing from the ♂ in the claw-structure as mentioned in the description of the genus.

25 specimens. I frequently beat this insect from the precinctive species of bush-groundsel *Senecio sechellensis*, after which I have named it.

Loc. Seychelles. Silhouette: plateau of Mare aux Cochons and near by, over 1000 ft., VIII.—IX. 1908, 14 ♂ collected by Gardiner and Scott. Mahé: Cascade Estate, about 1000 ft., XII. 1908, 1 ♂; near Morne Blanc, 1908, 1 ♂; 1 ♀, 1905 (Gardiner). Also 8 other ♂ collected by J. A. de Gaye, exact locality not specified.

Comaserica Brenske, Berlin. Ent. Zeitschr., xliv. 1899, p. 263 (and table, p. 235; also table, *op. cit.* xlii. 1897, p. 356).

In this genus of Sericinæ, among other characters, the anterior tibiæ are bidentate; the antennæ 9-jointed, with 3 lamellæ in both sexes; the mentum convexly elevated, the convexity flattened in front; the thorax has the hind angles rounded off; the upper surface has setiferous punctures distinct from ordinary punctures; there is no mesosternal process between the middle coxæ, and the metasternum is not impressed in the middle; the posterior femora are broad at their bases, narrowed towards the apex; the posterior tibiæ cut off obliquely on the inner side at the apex; the claws of the tarsi are cleft.

The genus is well defined, and so far known only from Madagascar.

17. *Comaserica granulipennis* (Fairmaire).

Homaloplia granulipennis Fairmaire, Ann. Soc. ent. Belgique, xli. 1897, p. 376.

Serica granulipennis Alluaud, Liste Coléopt., p. 258.

Comaserica granulipennis Brenske, Berlin. Ent. Zeitschr., xliv. 1899, p. 266.

A series of about 34 ♂ and 28 ♀ was collected in Aldabra by Mr Fryer. Specimens were sent to Herr Kapitän Moser, who informed me that the species is distinct from any in Brenske's collection, but suggested that it might be identical with that named by Fairmaire *granulipennis* and placed by him in *Homaloplia*. I therefore sent specimens to Monsieur Lesne, who compared them with Fairmaire's type of *H. granulipennis* at the Paris Museum, and informed me that he considers them identical with that species. He states that the only difference he was able to see lay in the size of the granules at the bases of the setæ on the elytra, which granules are larger and more marked in the type than in the Aldabra specimens. Fairmaire described the elytra as "parsemées de petites soies grises très courtes et de soies fauves plus longues et hispides." The "hispid yellow hairs" are obvious enough, but what is meant by the "very short little grey hairs" I do not know; they are not present in any of the Aldabra specimens. As Fairmaire's description is not very full, I subjoin the following, made entirely from the series of Aldabra specimens before me:

Length $5\frac{3}{4}$—$6\frac{3}{4}$ mm.; breadth $3\frac{3}{4}$—$4\frac{1}{4}$ mm. Ovate, broadening behind; unicolorous reddish-brown, some specimens much darker and a few paler; lamellæ of antennæ testaceous, in ♂ about twice as long as joints 1—6 together, in ♀ about as long. Body dull, sometimes with pearly opalescence (but not with coppery sheen), except the clypeus and part of the frons and the tibiæ and tarsi, which are shining; bearing numerous pale yellowish setæ erect or leaning backwards. Clypeus about $\frac{2}{3}$ as long as its breadth at the

base; anterior margin only about ½ as broad as the base, reflexed, straight or slightly sinuate in the middle, the angles and sides rounded; surface slightly elevated in the middle, densely and rather coarsely punctured with some setiferous punctures. Frons just above the suture shining, and with a group of strong setiferous punctures on either side; upper part of head dull and more finely punctured. Prothorax over 1½ times as broad as long, rather narrowed in front, finely margined, the sides rounded and hind angles rounded right off, the base sinuate on either side of the middle and the median portion margined with closely-placed minute hairs; surface finely punctured, distinct setiferous punctures numerous, especially along the front and side margins, setæ along the side margins specially conspicuous and outstanding. Scutellum with punctures bearing small hairs. Elytra at the base about as broad as the thorax, behind the middle about 1½ times as broad as the thorax; striæ rather broad, alternate ridges a little more elevated, but none of the ridges are sharply defined or more than slightly elevated. Ridges impunctate, but striæ bearing numerous fine punctures, so that the elytron as a whole appears densely punctured; setiferous punctures forming a regular series along the inner edge of each stria, placed rather close together in the series and each having a little granule or prominence in front of it. Apical angle of each elytron bearing a small group of setæ. Pygidium bearing numerous setæ, larger and smaller; its sides strongly converging, apex subtruncate. Hind coxæ bearing long setæ near the base, hind femora bearing short setæ on the surface and a rather close series along the hind margin. Abdominal segments each with two irregular transverse rows of setæ. 1st joint of hind tarsus a little shorter than joints 2 and 3 together; inner apical spur of hind tibia situated further forward than the base of the tarsus, over ½ as long as the 1st tarsal joint.

Loc. Aldabra: Takamaka, XI. and XII. 1908; some are recorded as having come to light (Fryer). Madagascar: Diego Suarez.

Perissosoma Waterhouse, Ann. Mag. Nat. Hist., ser. 4, xv. 1875, p. 409.

18. *Perissosoma ænescens*, Waterhouse.

Perissosoma ænescens Waterhouse, *op. cit.* p. 410; Alluaud, Liste Coléopt., p. 269; Linell, Proc. U. S. Mus., xix. 1897, p. 703; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

Perissosoma tenuitarse Fairmaire, Bull. Soc. ent. France, 1895, p. cclxxviii; Alluaud, *loc. cit.*; Kolbe, *loc. cit.*

67 specimens, all males; they agree closely with specimens of *P. ænescens* in the British Museum. Examples were sent to Dr A. Sicard, who compared them with specimens of *P. tenuitarse* at Paris; he informs me that the two species are identical, and therefore the name *tenuitarse* must give way to *ænescens*. Fairmaire stated that the club of the antenna of the ♂ *P. tenuitarse* is formed of 3 lamellæ; but Waterhouse describes the club of the antenna of the ♂ *P. ænescens* as being composed of 4 lamellæ, which it certainly is in the British Museum specimens, and in my specimens, all of which I have examined. It appears therefore that Fairmaire was mistaken as to the number of lamellæ.

I have seen no female of this species. Fairmaire describes the ♀ of *P. tenuitarse* as

" magis crassa, elytris piceis, sat fortiter punctatis, suturâ valde elevatâ, utrinque costis 2 sat elevatis," and states that it differs much from the ♂, and has the club of the antenna composed of 5 lamellæ.

There is slight variation in size etc. in the series. Length varies from 9—11 mm. Some specimens are shining black, others are more bronze-coloured, in a few the elytra are pitchy-ferruginous : all are strongly shining with a brassy lustre. I have measured the wings and elytra in 3 specimens and found the length of the former averaging about twice that of the latter.

Loc. Seychelles. Mahé : various localities, mostly about 1000 feet, X. 1908—II. 1909. I first met with this species on Oct. 17th, 1908, at an elevation of about 1000 ft., while descending the road from Capucin to Port Victoria ; over a large part of the way specimens were flying rapidly, low over the road, occasionally settling on the scented lemon-grass planted by the wayside ; the afternoon was dull and extremely damp after much heavy rain. Some of the specimens were obtained earlier, 1905—1907 (Thomasset, Gardiner, de Gaye). The species was previously taken in Mahé by Alluaud and P. Wright. According to Linell (*l. c.*) it was found in Glorioso Island by Abbott.

19. *Perissosoma grande*, sp. nov.

♂. Piceo-ferrugineum, ænescens, nitidum ; *P. ænescente* multo majus, latius, minus depressum ; capite crebrius punctato, antice minus impresso, vertice unituberculato, clypeo antice magis rotundato ; antennarum clavis 3-lamellatis ; thorace subtilius punctato, lateribus medio magis rotundatis ; elytris fortius punctatis. Long. corp. $11\frac{3}{4}$—13 mm.

Distinguishable at once from *P. ænescens* ♂ by its much greater size, much less depressed form, and greater proportionate breadth ; by the clubs of the antennæ being composed of 3 instead of 4 lamellæ ; by the head being much less strongly impressed, with its front margin more rounded, and by its possessing a small but quite distinct tubercle on the vertex.

The colour is brownish-bronze, as opposed to the blackish-bronze of *P. ænescens*. Clypeus densely punctate, its punctuation rather subrugose ; the line of division between it and the frons distinct. Rest of the head fairly strongly punctate, the punctuation becoming finer on the posterior part. Thorax very finely punctured, its sides more rounded and less nearly subangulate in the middle than in *P. ænescens*. Elytra proportionately shorter than in *P. ænescens* : as in that species, each has a distinct stria near the suture, the space between it and the suture being impunctate ; the remainder of the elytron is rather irregularly striate-punctate, with the interstices not very closely punctate ; the punctures are all very distinct, and larger and stronger than in *P. ænescens*. Wing nearly twice as long as the elytron. Pygidium more closely and finely punctured than in the preceding species.

I have seen 3 specimens, all males. Two were obtained by our expedition, the third was obtained earlier, by Mr R. P. Dupont, and is in the British Museum. My two specimens differ greatly in size, but agree in all characters that separate *P. grande* from *P. ænescens*. Unfortunately only one specimen has the antennæ intact, but in that one they are quite perfect. I at first thought this must be the ♂ of *P. tenuitarse* Fairmaire ;

but Dr Sicard and Monsieur Alluaud, after examining specimens, both state without hesitation that *P. tenuitarse* is identical with *P. œnescens*, and that *P. grande* is new.

Loc. Seychelles. Praslin: from Coco-de-Mer Forest in the Vallée de Mai, Côtes d'Or Estate, XI. 1908, 1 ♂ (Type) collected by R. P. Dupont. Félicité, XII. 1908, 1 ♂.

Rutelini.

Parastasia Westwood, Ann. Mag. Nat. Hist., ser. 1, viii. 1841, p. 204.

20. *Parastasia coquereli*, Fairmaire.

Parastasia coquereli Fairmaire, Ann. Soc. ent. France, ser. 4, viii. 1868, p. 789; Linell, Proc. U. S. Mus., xix. 1897, p. 696; Alluaud, Liste Coléopt., p. 269; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 23.

12 males and 2 females were obtained. There is considerable variation in the colouring of the elytra: in most cases there is a lighter (yellowish-brown) patch at the base of the elytron, sharply marked off from the dark remaining portion; but in some specimens the lighter colour is spread over almost the whole elytron. These colour-differences are not dependent on sex. Dissection of two of the specimens with sharply-marked basal patches has shown one to be ♂, the other ♀; and it has also shown that the two specimens in my series with the most uniformly light-coloured elytra are both males. The lamellæ of the antennal club are longer in the male than in the female. The thorax in the male is broader in the basal portion and more abruptly narrowed before the middle, the sides being subangulate at the middle, whereas in the female they are much more gradually rounded from the posterior to the anterior angle.

Loc. Seychelles. Mahé: 2 ♂ which came to light near Morne Blanc, about 800 feet, X. 1908; 2 ♂ from Cascade Estate, II. 1909; 7 ♂ and 1 ♀ which came to light at Port Victoria on a rainy night, II. 1909: also 1 ♂ and 1 ♀ obtained by the "Sealark" Expedition (1905). Previously obtained in Mahé by Coquerel, Alluaud, and Abbott, and in La Digue by Alluaud.

Adoretus Castelnau, Hist. Nat. Col., ii. 1840, p. 142.

21. *Adoretus versutus*, Harold (Pl. **12**, figs. 10—12).

Adoretus versutus Harold, Coleopt. Hefte, v. 1869, p. 124; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 22.

Adoretus vestitus Boheman (*nec* Reiche), Eugenies Resa, ii. 1. 1858, p. 56.

Adoretus insularis Fairmaire, Ann. Soc. ent. Belg., xli. 1897, p. 105; Alluaud, Liste Coléopt. p. 271.

I am indebted to Dr F. Ohaus for kindly determining this species; he tells me that the specimens which I sent to him are absolutely identical with a specimen of *A. versutus* from St Helena, which is in his possession. Also Dr Sicard, who kindly compared specimens with those in Fairmaire's collection, informed me that they are identical with *A. insularis* of that author. Therefore the name *insularis* must become a synonym of *versutus*.

I have about 22 males and 19 females from the Seychelles, and 5 females from the Chagos. There is considerable variation: length varies from 9½ mm. (an exceptionally small ♂) to over 11 mm. The females are proportionately broader, and darker in colour. In the ♂ the clypeus is shorter, with its front margin more nearly straight; in the ♀ it is proportionately longer, with more rounded margin. In the ♂ the larger claw of the front and middle tarsi is so slightly cleft at its apex that, unless looked at from a certain position (Pl. **12**, fig. 10 *a*) it appears not to be cleft at all; in the ♀ it is distinctly cleft (Pl. **12**, fig. 11). In the ♂ also the larger claw of the *middle* tarsus has a sharp indentation near its base (Pl. **12**, fig. 10). The ♂ genital apparatus is asymmetrical (Pl. **12**, fig. 12, *a*, *b*) at the apex, the left-hand piece being the larger and quite differently formed to the right-hand one. I have dissected it out in five specimens and found it exactly the same in all of them.

This species eats the leaves of rose-trees in the gardens at Port Victoria at night, and can then often be attracted to a lantern and caught. I am indebted to Monsieur de Gaye for showing me how thus to take it in numbers. Specimens numbered "207" were obtained thus on the night of 9. II. 1909.

Loc. Seychelles. Mahé: Port Victoria; Cascade Estate 800—1000 ft., 1 ♀; several specimens, 1905: previously obtained in Mahé by Alluaud, and by Brauer (Mamelles plantation, June—July). Silhouette, 1 ♀, VIII. 1908. Praslin, 1 ♀ from Coco-de-Mer forest in Côtes d'Or Estate, XI. 1908. Félicité, 1 ♂, XII. 1908.

Chagos Islands; Egmont Atoll, 5 ♀ and 1 ♂, 1905.

The species was first described from St Helena. Dr Ohaus states that it occurs throughout the Oriental Region (India, China, Samoa, Fiji, etc.) and is described under several names. There are specimens from Mauritius in the British Museum.

[*Adoretus umbrosus* (Fabricius).

Melolontha umbrosa Fabricius, Ent. Syst., i. 2. 1792, p. 169.

This species is recorded by Linell (Proc. U. S. Mus., xix. 1897, pp. 696 and 703) as having been obtained by Abbott in the Seychelles and in Glorioso Island. The nomenclature of some species of *Adoretus* seems to be in confusion, so that there may be some uncertainty as to which one Linell had before him. Judging, however, by information received from Dr Ohaus, it appears unlikely that it was the true *umbrosus* of Fabricius. No other species besides *A. versutus* was obtained in the Seychelles by Alluaud, Brauer, or myself.]

Cetoniini.

Oxycetonia Arrow, Fauna Brit. India, Lamellicornia, part I, 1910, p. 163.

22. *Oxycetonia versicolor* (Fabricius).

Cetonia versicolor Fabricius, Syst. Ent., 1775, p. 51.

Glycyphana versicolor Alluaud, Liste Coléopt., p. 293; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 23.

Oxycetonia versicolor Arrow, Fauna Brit. India, Lamellicornia, part I, 1910, p. 164.

54 specimens. 53 belong to var. *d* (=*variegata* Fabricius, or *luctuosa* Gory et Percheron), that is, they are entirely black and opaque, with white markings. The remaining 1 specimen (from Chagos Islands) belongs to var. *b* (=*cruenta* Pall.), being opaque, and with the black replaced by red on the thorax (except for a pair of black discoidal spots) and over all the middle part of each elytron.

Loc. Chagos Islands: Peros Banhos Atoll, 1905, many var. *d* and one var. *b*. Amirantes: Desroches and Poivre Islands, 1905. Coetivy, 1905. Farquhar Atoll, 1905. Seychelles: Mahé, 1905 and 1908—9. This species was found over the whole area visited by the Expedition, the Aldabra group excepted. In the Seychelles it is not found in the endemic mountain-forests. Well-known from India, Madagascar, and the Mascarene Islands; var. *d* is apparently confined to Ceylon and the Madagascar area.

PROTÆTIA Burmeister, Handb. Ent., iii. 1842, p. 472.

23. *Protætia aurichalcea* (Fabricius).

Cetonia aurichalcea Fabricius, Syst. Ent., 1775, p. 49.

Cetonia maculata Fabricius, Spec. Ins., i. 1781, p. 58; Alluaud, Liste Coléopt., p. 294.

Protætia maculata Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 23.

Protætia aurichalcea Arrow, Fauna Brit. India, Lamellicornia, part I, 1910, p. 143, Pl. 1, fig. 7.

Loc. Amirantes: Desroches and Eagle Islands, large numbers, 1905. Seychelles: Mahé, 1905 and 1909; Dennis Island, 1908 (Fryer); Praslin, 1 specimen, 1905; Frigate Island, 1 specimen, 1905; Marie Anne Island, from plantation, several specimens, 2. XII. 1908 (Dupont). Not found in the endemic mountain-forests. Previously collected in the Seychelles by Alluaud and Brauer. India, Mauritius, Réunion.

OXYTHYREA Mulsant, Coléopt. de France, Lamell., 1842, p. 572.

Leucocelis Burmeister, Handb. Ent., iii. 1842, p. 421.

It is pointed out by Arrow, in a footnote to p. 175 of the volume (1910) on Cetoniinæ and Dynastinæ in the Fauna of British India Series, that Mulsant's name for this genus was published earlier in the year 1842 than that proposed by Burmeister.

24. *Oxythyrea aldabrensis*, Linell.

Oxythyrea aldabrensis Linell, Proc. U. S. Mus., xix. 1897, p. 700; Alluaud, Liste Coléopt., p. 293.

Leucocelis aldabrensis Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 575.

Linell states that this species is allied to the S. African *O. marginalis* Swartz. It was discovered in Aldabra by Abbott, and subsequently found there by Voeltzkow. We have a large series.

Loc. Aldabra: Picard Island, I. 1909 (Fryer); 1907 (Thomasset). Cosmoledo; several specimens, 1907 (Thomasset).

It is of interest to note that a quite distinct species, *Oxythyrea abbotti* Linell (*op. cit.* p. 703), was discovered by Abbott in Glorioso Island.

MAUSOLEOPSIS, Lansberge.

Mausoleopsis Lansberge, C. R. Soc. Ent. Belgique, 1882 (*February*), p. 29.

Microthyrea Kraatz, Deutsche Ent. Zeitschr., 1882 (*April*), p. 76.

In this genus there is a tubercle, bearing a spiracle, on either side of the body at the posterior margin of the 5th ventral abdominal segment.

As pointed out by Kolbe (Stettin. Ent. Zeit., 1895, p. 287), Lansberge's name should be used for this genus as it was published a little before the name proposed by Kraatz.

25. *Mausoleopsis aldabrensis* (Linell).

Microthyrea aldabrensis Linell, Proc. U. S. Mus., xix. 1897, p. 700; Alluaud, Liste Coléopt., p. 293.

? *Microthyrea providenciæ* Linell, *l.c.* p. 705; Alluaud, *l.c.*

Elassochiton selika var. *aldabrensis* Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 574.

The sexual characters in this species are very distinct. In the ♂ the claws of the front tarsi are unequal, the external one much longer, somewhat contorted, and slightly incrassate in the middle; in the hind legs, the femora are strongly curved, the tibiæ slightly incrassate with a groove on the inner surface and short apical spurs; ventral abdominal segments 1—4 have a well-marked median group of close fine punctures; and the pygidium has its apex truncate with rounded angles. In the ♀ the anterior tarsal claws are equal, the posterior femora nearly straight, posterior tibiæ not incrassate nor grooved, with apical spurs much longer and bigger than in the male; the ventral segments have no median group of punctures; the pygidium has its apex rounded, narrower.

M. aldabrensis was described from 3 ♀ from Aldabra, and *M. providenciæ* from 2 ♂ from Providence Island. The description of the male characters of *M. providenciæ* agrees with the male characters of specimens from Aldabra. In fact, according to the description, *M. providenciæ* only differs from males of *M. aldabrensis* in having the sides of the thorax "sinuate behind the middle" and a few punctures on the scutellum: in some of the Aldabra males before me there is a faint trace of sinuation of the sides of the thorax behind the middle, but I have not observed any specimens with punctures on the scutellum. It seems extremely probable that *M. providenciae* is really the male of *M. aldabrensis*; this probability is heightened by the fact that *M. aldabrensis* appears to be widely-spread in the coral-islands of this region, there being specimens in the British Museum from Aldabra, Astove, and St Pierre.

Professor Kolbe treats *M. aldabrensis* as a variety of *M. selika* Raffray, which he refers to (*l.c.*) under the name of the subgenus *Elassochiton*. Raffray's species was described as *Oxythyrea selika*, Rev. Mag. Zool., 1877, p. 332, from Zanzibar and E. Africa: I have examined specimens of it in the British Museum. *M. selika* and *M. aldabrensis* are certainly distinct, though closely-allied, forms: whether the latter should be treated as a different species or only as a variety of the former is not easy to decide. The specimens of *M. selika* in the British Museum are smaller than most of the *M. aldabrensis* before me, though the length of the species as given by Raffray varies considerably, and

that of the *M. aldabrensis* before me from 10—13 mm. *M. selika* has the white markings more numerous: in it the anterior marginal spot on the elytra is divided into two, and there are 4 small spots on the disc of the thorax, as well as the 6 large marginal ones: in most of the *M. aldabrensis* these 4 small spots are absent. In *M. selika* the head is more densely punctured and the smooth space on the vertex much reduced or practically absent; the thoracic punctures are a little more numerous; the ventral abdominal segments have more numerous punctures in both sexes, and the close median grouping of fine punctures in the ♂ is less marked: the pygidium is subcarinate in the middle and slightly depressed on either side, while in *M. aldabrensis* the median elevation is often slightly less marked. Alluaud in his "Liste Coléopt." in footnote (2) on p. 293, states that *M. aldabrensis* might be a synonym of *Oxythyrea clouei* Blanchard: I have however read Blanchard's description and seen specimens agreeing with it, and have no doubt that *O. clouei* is absolutely distinct.

Loc. Aldabra, Astove, Assumption, Cosmoledo, St Pierre, Providence (?). About 50 specimens: Aldabra, Esprit and Picard Islands, XII. 1908 and I. 1909 (Fryer); Assumption, IX. 1908 (Fryer); Aldabra and Cosmoledo, 1907 (Thomasset). The specimens from Astove and St Pierre, and one from Wasin Island (on the coast of Brit. E. Africa), are in the British Museum.

ADEPHAGA.

*30 species of Adephaga are here enumerated from the islands visited by the Percy Sladen Trust Expedition. 26 of these are actually represented in the collections formed by the Expedition: one more (*Hypolithus pavoninus*) is doubtfully represented: while the remaining 3 (*Pentagonica mahena*, *Laccophilus addendus* and *Bidessus peringueyi*) were found in the islands by previous collectors, but not by the Expedition. 17 species were previously known, so that the list is now increased by 13 species, 4 of which are new to science. The 30 species are representative of 20 genera. The Cicindelidæ are represented by two distinct forms of a single species of *Cicindela*: the Carabidæ by 13 species belonging to 10 genera: and the Dytiscidæ by 16 species belonging to 9 genera.

Distribution within the area of the Expedition.

As in the case of the Lamellicornia, I have adopted the form of a table to demonstrate the "internal" distribution of the species. I would also again refer to those characteristics which distinguish the Seychelles from all the other islands in question, and which were briefly mentioned on p. 217. In the following table it has been necessary to add a special column for the island of Coetivy: this is a small low island of coral-formation, which lies close to the South of the Seychelles, but which does not stand on the Seychelles Bank.

* The number is actually 31, since in addition to those mentioned above, there is from Aldabra a single specimen of a quite distinct kind of Carabidæ. It is, however, in such bad preservation that neither its species nor its genus can be determined, and it is therefore left out of account in these introductory remarks.

Before the names of the species:

* indicates that the species is new to science,

† indicates that the species is recorded from these islands for the first time.

	Seychelles Group	Coetivy	Chagos Group	Amirantes Group	Farquhar Group	Aldabra Group (incl. Aldabra, Astove, Assumption and Cosmoledo)
Cicindela melancholica trilunaris						—
Cicindela melancholica seychellensis	—				—	
†Ophionea sp.	—					
†Pheropsophus humeralis						—
Tetragonoderus bilunatus	—	—		—	—	—
Pentagonica mahena	—					
Chlænius bisignatus	—					
Hypolithus pavoninus						—
Hypolithus sechellarum	—	—		—	—	
†Hypolithus pulchellus						—
Dioryche interpunctata		—				—
Stenolophus fulvipes	—			—		
†Tachys bibulus	—					—
*Tachys seychellarum	—					
†Anillus sp.	—					
Canthydrus notula						—
Laccophilus posticus						—
Laccophilus addendus						—
†Hydrovatus humilis						—
†Bidessus thermalis			—			
†Bidessus capitatus						—
*Bidessus farquharensis					—	
Bidessus peringueyi	—					
†Bidessus sp.						—
Hyphydrus impressus						—
*Copelatus gardineri	—					
*Copelatus pandanorum	—					
Copelatus pulchellus						—
Hydaticus leander	—	—				
Eretes sticticus						—
Cybister tripunctatus						—

The following facts can be summarized from the above table:

The single species of *Cicindela* occurs, under two slightly different forms, in the Seychelles, the Farquhar Group, and the Aldabra Group: the Seychelles form is described for the first time in this paper, and I am obliged to refer to it the single specimen from Farquhar, though one would rather expect specimens found in that group of islands to belong to the form that is found in Aldabra.

9 species of Carabidæ have been found in the Seychelles, and 6 in Aldabra. Only 2 species (*Tetragonoderus bilunatus* and *Tachys bibulus*) have been found both in the Seychelles and in Aldabra, and one of these (*Tetragonoderus bilunatus*) occurs also in Coetivy, the Amirantes, and the Farquhar Group. 2 other of the species found in the Seychelles (*Hypolithus seychellarum* and *Stenolophus fulvipes*) occur also in some of the other islands, though they have not been found in the Aldabra Group: and one of the Aldabra species (*Dioryche interpunctata*), though it has not been found in the Seychelles, has yet been found in the neighbouring island of Coetivy.

No representative of either Cicindelidæ or Carabidæ has yet been found in the Chagos Islands.

Only 4 species of Dytiscidæ have been found in the Seychelles, while 10 species occur in Aldabra. Not one of the 10 Aldabra species has been found in any of the other islands. Only one of the Seychelles species has been found in any of the other islands, namely the very wide-spread *Hydaticus leander*, which occurs also in Coetivy. A single species (*Bidessus farquharensis* sp. nov.) has been found in the Farquhar Group, and a single one (*Bidessus thermalis*) in the Chagos, the latter being the only form of Adephaga known to occur in that group of islands.

External Distribution.

It is again convenient to consider the general distribution and affinities under two principal heads, namely (A) the fauna of the Seychelles, and (B) the fauna of Aldabra. To these must also be added a third head (C) including two species not known to occur in either of those groups, but known from the Chagos and Farquhar Groups respectively.

A. Seychelles. *Cicindela melancholica* is a widely distributed species, occurring under various different forms (subspecies, varieties, etc.) in Southern Europe, Africa, and Madagascar. The form found in the Seychelles is closely related to subsp. *trilunaris* Klug, which occurs in Madagascar, East Africa, and Aldabra, and I hear from Dr W. Horn that var. *seychellensis* is also related to var. *perplexa* Dejean, which was first described from Réunion.

With the possible exception of *Tachys seychellarum* and *Anillus* sp., it may be said that no truly endemic Carabidæ are known from the Seychelles. During the greater part of 8 months I collected constantly, and by many and various methods, in the endemic mountain-forests, and Carabidæ seemed to be conspicuous only by their entire absence. Those species which are found in the islands occur in the cultivated country, often near the coast, and several of them are found in certain of the coral-islands in the same region. 3 of the species (*Tetragonoderus bilunatus*, *Chlænius bisignatus*, and *Tachys bibulus*) are Madagascar-Mascarene species; one of them, *Chlænius bisignatus*, is stated by Professor Kolbe (Mitt. Zool. Mus. Berlin, v. 1910, p. 17) to be closely related to certain African *Chlænii*. *Hypolithus seychellarum* too, which occurs not only in the Seychelles but also in the Amirantes and Farquhar Groups, is closely related to certain African and Madagascan species. *Stenolophus fulvipes* has not been recorded from Madagascar, but occurs in the Comoros and in parts of Africa as distant from one another as Mozambique and Angola. Kolbe (*op. cit.* p. 18) writes that *Pentagonica mahena* is one of a number of very similar species, and that the genus *Pentagonica* occurs in Madagascar, Africa, South and East Asia, Australia, New Zealand, Tropical America, etc. Nothing can be said as to the affinities of the undetermined *Ophionea*, or of the minute *Tachys seychellarum*, which latter is possibly indigenous and peculiar to the Seychelles. The presence of the extremely minute, blind and wingless *Anillus* is most interesting, and it is to be hoped that further material of it may be obtained, so that its species can be determined. Species of *Anillus* have been discovered in variously widely-separated parts of the world,

such as France and California. Certain apparently allied genera (*Nesomicrops* and *Macranillus*) occur in the Hawaiian Islands (see Sharp, Fauna Hawaiiensis, vol. iii., part iii. 1903, pp. 286—7, etc.). The preponderance of affinities of the Seychelles Carabid-fauna is therefore seen to be with Madagascar and Africa.

In the case of the Dytiscidæ, the Seychelles possess, in the 2 species of *Copelatus* (*C. gardineri* and *C. pandanorum*), a truly endemic element in their fauna. Both of these are found in the high parts of the islands. *C. gardineri*, which is practically the only water-beetle found in the streams in the mountains, may possibly be related to certain Madagascar species; but I have not been able to find any species closely related to *C. pandanorum*, which is attached in a very special manner to certain endemic trees (see p. 259*). With regard to the other two Dytiscidæ found in the Seychelles, *Bidessus peringueyi* is an Afro-Madagascan species, while *Hydaticus leander* is very widely distributed (South Europe, Africa, Syria, Madagascar).

If the Adephagan fauna of the Seychelles be compared with the Lamellicorn-fauna of those islands (*ante*, p. 218), certain differences are apparent. In the Adephaga, the truly endemic element is proportionately smaller: the relationships of the non-endemic species do not point in so many directions, but are predominatingly Madagascan and African; there is no Eastern element in the Adephagan fauna such as that which is brought into the Lamellicorn-fauna by the presence of *Parastasia coquereli*, nor are there any South-Asiatic species corresponding to the two Cetoniines *Oxycetonia versicolor* and *Protætia aurichalcea*.

B. Aldabra Group. The subspecies *trilunaris* of *Cicindela melancholica* is, as stated above, a Madagascan and East African form. Of the 6 species of Carabidæ found in Aldabra, *Pheropsophus humeralis* and *Tetragonoderus bilunatus* (which also occurs in the Seychelles) are Madagascar species; *Tachys bibulus* is known from Madagascar and the Mascarene Islands; *Hypolithus pulchellus* occurs in Madagascar and in Africa, having been described from the far side of that continent (Senegal); *Hypolithus pavoninus* is an East African species, while *Dioryche interpunctata*, which occurs also in Coetivy Island, is widely distributed, being known from West Africa, Madagascar, the Mascarene Islands, and the Coromandel coast of India.

Of the 10 species of Dytiscidæ, 4 (*Laccophilus posticus*, *Laccophilus addendus*, *Hydrovatus humilis* and *Bidessus capitatus*) are Madagascar species; 2 (*Hyphydrus impressus* and *Copelatus pulchellus*) are Afro-Madagascan, occurring in Madagascar, the Mascarenes, and very widely separated parts of Africa; one species (*Canthydrus notula*) is Tropical African, not known from Madagascar; while 2 (*Eretes sticticus* and *Cybister tripunctatus*) are very widely spread, the former having a world-wide distribution.

The predominant Madagascan and African affinities of the Aldabra Adephagan fauna are therefore evident.

C. There remain 2 species, both Dytiscidæ, which were found neither in the Seychelles nor in the Aldabra Group. The former, *Bidessus thermalis* from the Chagos Islands, is a widely distributed species, represented by various forms in Southern Europe, North and West Africa, Egypt, Arabia, Persia, and Bengal. The other species, *Bidessus farquharensis* from Farquhar, is described as a new species.

* Also cf. the bottom of p. 218.

Condition of the wings in the Carabidæ.

It has been possible to investigate this to some extent in 8 out of the 13 species. One of the forms examined is the flightless *Anillus*: another is *Dioryche interpunctata*, in which a remarkable and apparently discontinuous variation has come to light, some of the specimens having the wings reduced (see p. 249): with these exceptions no trace of reduction or atrophy of wings has been discovered, and as far as can be seen the general condition of these organs is one of full development.

The condition of the wings in this family is particularly interesting, as in some insular faunas the Carabidæ are remarkable for having a large number of flightless species. This is especially the case in the Hawaiian Islands, for an account of the Carabid-fauna of which I must refer to Dr Sharp's very interesting introductory remarks on that family in Fauna Hawaiiensis, vol. iii., part iii. pp. 175—189. In almost every point, however, the Carabid-fauna of the Seychelles stands in most marked contrast to that of the Hawaiian Islands. In the latter, the endemic forests are tenanted by a large number (over 200 species) of Carabidæ, all of which, with the exception of one species, are confined to the Archipelago; this large number of species belongs to very few groups, presenting, to use Dr Sharp's phrase (*op. cit.* p. 177), the phenomenon of great "taxonomic concentration"; in their affinities they are almost all very isolated; while 90 per cent. of them are flightless (*op. cit.* p. 178), having the wings more or less reduced. In the Seychelles, on the other hand, the endemic forests are to all appearance devoid of Carabidæ, such species as do occur in the islands being found in the cultivated lower country: the Carabid-fauna is small and fragmentary, consisting of a number of genera belonging to different groups and represented each by either a single or at most by very few species: the species themselves are not isolated in their affinities, but are either more or less widely-spread outside the islands, or closely-allied to species found elsewhere: while, with the two exceptions mentioned above, they appear to have their wings fully-developed.

Some of the points of difference between the Seychelles and Hawaiian faunas mentioned above are probably not confined to the Carabidæ, but will be found to apply also to many other sections of the entomological fauna. But it should be added that in one respect the Seychelles Carabid-fauna is not characteristic of the Coleopterous fauna of those islands as a whole, and that is in its apparent lack of an endemic element. It can be said fairly safely that many parts of the Seychelles Coleopterous fauna do possess such an element, and in this respect the Seychelles Carabidæ are not a fair sample of the whole Coleopterous fauna to use for purposes of comparison with other insular faunas.

Cicindelidæ.

Cicindela Linnæus, Syst. Nat., ii. 1735, p. 657.

26. *Cicindela melancholica*, Fabricius.

Cicindela melancholica Fabricius, Suppl. Ent. Syst., 1798, p. 63; Alluaud, Liste Coléopt., p. 9.

I am indebted to Dr Walther Horn for assisting me in dealing with the varieties of this species and their nomenclature, and for sending me specimens of several forms for

comparison. The specimens obtained by the Percy Sladen Trust Expedition belong to two forms of the species.

A. subsp. *trilunaris*, Klug.

Cicindela trilunaris Klug, Ins. Madag., Abh. Ak. Wiss. Berlin, 1832, i. p. 120, Pl. 1, fig. 1.

Cicindela congrua Klug, Monatsb. Berlin Ak., 1853, p. 245.

Cicindela trilunaris var. *aldabrica* Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 571.

A series of over 40 ♂ and over 30 ♀, all except 1 from Aldabra. Length varies from 9½—12½ mm. There is much variation in the exact form of the white markings on the elytra; in only few specimens is the transverse line completely separated from the posterior discoidal spot; in many the end of the line and the anterior part of the spot are drawn out so that they almost meet; and in many specimens they are completely united. In the single specimen (♂) from Assumption, the line and spot are quite separate, as is also the case in 3 specimens which Dr Horn sent me for comparison, 2 from Madagascar and 1 from German East Africa.

Loc. Aldabra: Takamaka, XI.—XII. 1908; Mr Fryer informed me that this *Cicindela* swarmed at the end of November, and that specimens came to the lamp and caught other insects which had been attracted: it was previously obtained in Aldabra by Voeltzkow, etc. Assumption: 1 ♂, 1910 (Dupont). Madagascar, East Africa.

B. var. *seychellensis*, nov.

=*tenuilineata* Alluaud (*nec* W. Horn), Liste Coléopt., p. 9.

var. oculis valde prominentibus, prothorace brevi; colore et sculpturâ capitis prothoracisque subsp. *trilunari* affinis, sed prothorace distincte breviore distinguenda. Long. corp. 9½—12 mm.

9 ♂, 11 ♀. Dr Horn tells me that this does not correspond exactly with any described form of the species. Its eyes are more prominent than those of any other form. The sculpture of the head and prothorax is very similar to that of *trilunaris* Klug, and (as Dr Horn informs me) almost identical with that of var. *perplexa* Dejean: that is to say, it is considerably smoother than that of the true *C. melancholica*. The prothorax is distinctly shorter and proportionately broader than that of *trilunaris*. In the series before me, although the superficial resemblance between the two forms is considerable, this distinguishing character in the form of the prothorax is constant. According to Dr Horn, the var. *perplexa* sometimes has the prothorax of about the same shape as that of var. *seychellensis*. The colour of *seychellensis* is very similar to that of *trilunaris*; a coppery-brown, with metallic green on parts of the head and the margins of the prothorax and in the punctures of the elytra. There is some variation in the white markings on the elytra; in none of the specimens before me is the transverse line joined to the posterior discoidal spot. In addition to specimens from Seychelles, I refer to this variety one specimen from Farquhar Atoll, which is about 460 miles to the South and relatively near the range of subsp. *trilunaris*.

Alluaud, in his List of Madagascar Coleoptera (p. 9), records the form *tenuilineata* W. Horn as having been found by him in Praslin: but Dr Horn tells me that what was

really got in Praslin by Alluaud is the var. *seychellensis*, just described above. The real *tenuilineata* W. Horn is a synonym of var. *perplexa* Dejean.

Loc. Seychelles: Praslin; in hot sunshine on bare red subsoil, paths behind Grande Anse, etc., XI. 1908; 1905; previously obtained in Praslin by Alluaud: Mahé, 1909, 1 specimen. Farquhar Atoll: 1 ♀, 1905.

Carabidæ.

Ophionea Klug, 1821.

Bedel (Bull. Soc. ent. France, p. 72, 1910) states that *Casnonia* Latreille and Dejean (1822) is exactly synonymous with *Ophionea* Klug (1821); but that *Casnoidea* Castelnau (1835) can be provisionally retained as a distinct genus, though differing from *Ophionea* only in having the 4th joints of the tarsi bifid, while in *Ophionea* they are not bifid. *Casnonia* Latreille is given by Alluaud in his Liste des Coléoptères de la Région Malgache, p. 38, as synonymous with *Colliuris* Degeer (1774), but Bedel (*l.c.*) considers that *Ophionea* (= *Casnonia*) should be kept separate from *Colliuris*, at any rate for the present.

27. *Ophionea* sp.

A single specimen belonging to a species not represented in the collections of the British Museum or (as M. Lesne has informed me) of the Paris Museum. There are however many described species which I have been unable to see, and I have thought it best not to make this single specimen a new species. The following is a description:

Length 6¼ mm. Head and thorax strongly shining, dark blue; labrum and mandibles dark reddish-brown, palpi testaceous, antennæ with joints 1—3 and the base of joint 4 testaceous, the rest of joint 4 and joints 5—11 darker; legs testaceous; elytra pitchy-brownish, testaceous at the apex, shining, with a slight metallic bluish reflection in front. Head smooth and impunctate but with some very fine transverse striolæ, rhomboidal, the sides behind the eyes sloping in towards the neck, the hind angles rounded off; the neck is constricted but not prolonged or excessively narrow. Thorax slightly longer than broad, narrowed in front and with the anterior angles rounded off, somewhat narrowed also at the base, with sides rounded and slightly sinuate before the posterior angles, which are almost right angles; surface smooth and impunctate in front, with faint transverse striolæ and a distinct median longitudinal line, rather closely and subrugosely punctured at the base. Elytra at the base twice as wide as the base of the thorax, or more, each with 8 striæ bearing series of punctures becoming obsolete towards the apex, and with a very short series of punctures at the base between the suture and the first stria; interstices smooth and flat. The elytra are nearly parallel-sided and obliquely subtruncate behind: I can see no trace on them of seriate tactile hairs such as are mentioned by Bedel (*op. cit.* p. 71) as occurring in certain members of the genus.

Loc. Seychelles: Mahé, 1907 (Thomasset).

PHEROPSOPHUS Solier, Ann. Soc. ent. France, ser. 1, ii. 1833, p. 461.

28. *Pheropsophus humeralis* Chaudoir, var. ?

Pheropsophus humeralis Chaudoir, Bull. Mosc., iv. 1843, p. 710; Alluaud, Liste Coléopt., p. 51, and footnote 4.

Pheropsophus omostigma Chaudoir, Ann. Soc. ent. Belgique, xix. 1876, p. 39.

The collection contains a single specimen of a *Pheropsophus* from Aldabra. Monsieur Lesne, to whom it was sent for examination, informs me that it does not appear to him to differ from the species in the Paris Museum which bears the name of *P. humeralis* Chaudoir. On the other hand I have compared it with two specimens in the British Museum named *P. humeralis* Chaud., one of which, received from Oberthür, bears his label stating that it was compared with the Type of the species; and there are certain differences between the Aldabra specimen and these two specimens. The Aldabra specimen has the shoulders of the elytra slightly less prominent. It has the light-coloured humeral mark much reduced, forming only a fine fleck. Chaudoir, however, in discussing this species (Ann. Soc. ent. Belgique, xix. 1876, p. 39), remarks that the humeral mark is "quelquefois presque effacée." The Aldabra specimen is 18 mm. long: it is rather light in colour, decidedly lighter than the two specimens in the British Museum; the ground-colour of the elytra is brown, not black, which agrees with Chaudoir's statement in the article just cited, that the "couleur du fond n'est pas noire, mais toujours brune"; the legs (excepting the dark marks at the apices of the femora) and light parts of the head and underside are of a light yellowish-testaceous; the dark mark on the vertex is strongly emarginate in front, somewhat narrower behind, and reaches back to the anterior margin of the thorax. As there is only one specimen, and as the British Museum specimens are not enough to indicate the extent of individual variation in the form of the shoulders, etc., it is not easy to decide whether the Aldabra specimen should be considered as a distinct species or as a form of *P. humeralis*, but I have decided to retain it under that name. Wings can be seen under the elytra of the specimen.

Loc. Aldabra: Takamaka, 1907 (Thomasset). *P. humeralis* Chaud. is known from Madagascar.

TETRAGONODERUS Dejean, Spec. Col., iv. 1829, p. 485.

29. *Tetragonoderus bilunatus*, Klug.

Tetragonoderus bilunatus Klug, Ins. Madag., Abh. Ak. Wiss. Berlin, 1832, i. p. 135; Alluaud, Liste Coléopt., p. 42; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 572, and Mitt. Zool. Mus. Berlin, v. 1910, p. 17.

A series of about 41 ♂ and 32 ♀. I have mounted the elytra and wings of several specimens and find the wings well-developed: a large ♂ has the elytron $3\frac{3}{4}$ mm. long, wing $6\frac{1}{4}$ mm.; a small ♂ has the elytron 3 mm. long, wing $4\frac{3}{4}$ mm.; 3 ♀ have each the elytron 3 mm. long, wing 5 mm.

Loc. Seychelles. None of the specimens were found in the mountain-forests, but all in the low country or at the coast, frequently in bare and dry places where the subsoil is exposed: Mahé, Silhouette, Praslin, Bird Island: previously recorded from Mahé by Kolbe and Fairmaire. Coetivy, 1905. Farquhar Atoll, 1905. Amirantes, 1905: Eagle and Desroches Islands. Aldabra, 1895 (Voeltzkow). Madagascar.

PENTAGONICA Schmidt-Göbel, Faun. Col. Birmaniæ, 1846, p. 47.

30. *Pentagonica mahena*, Kolbe.

Pentagonica mahena Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 18.

No specimen of any species of this genus was obtained by the Percy Sladen Trust Expedition.

Loc. Seychelles: Mahé (Brauer).

CHLÆNIUS Bonelli, Obs. ent., i. 1809, tabl. synopt.

31. *Chlænius bisignatus*, Dejean.

Chlænius bisignatus Dejean, Spec. Col., ii. 1826, p. 303; Alluaud, Liste Coléopt., p. 31; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 17.

8 specimens, 4 of which have the yellow spot on the posterior part of the elytra, while in the other 4 it is completely absent. Kolbe (*l.c.*) remarks that Fairmaire had previously stated the species to be represented in the Seychelles by a form without the yellow spot, but that the specimens obtained by Brauer possessed it. Thus, in the series before me, the two forms are equally represented. I have examined the wings of two specimens (one belonging to the form with a spot on the elytron, and one to that in which it is absent), and find them 11 mm. long, while the elytron is about 7 mm. long.

Loc. Seychelles. Mahé; from the low cultivated country, various localities: previously obtained by Brauer, etc. Mascarene Islands, Comoro, Madagascar.

? HYPOLITHUS.

Hypolithus Dejean, Spec. Col., iv. 1829, p. 166.

Of the following 3 species, the first (*H. sechellarum* Kolbe) was described as a *Siopelus*, and the remaining two are sometimes referred to that genus. They do not, however, agree with the original description, nor with the type-species of *Siopelus*, in one particular, namely with regard to the presence or absence of a median tooth in the emargination of the mentum. *Siopelus* was described by Murray, Ann. Mag. Nat. Hist., ser. 3, 1859, vol. 3, pp. 27, 28. Murray gives as the first diagnostic character (on p. 27) "mentum profunde emarginatum, sine dente": and on p. 28, in the remarks following the diagnosis, he again mentions that the mentum has no median tooth. I have examined in the British Museum the original species, *S. calabaricus*, described by Murray (*op. cit.* p. 28), and also *S. venustulus*, in both of which the median tooth is quite absent. Bates also, in his description of *S. ferreus* from Ceylon (Ann. Mag. Nat. Hist., ser. 5, 1886, vol. xvii. p. 76), definitely states that the mentum of that species is destitute of a median tooth. On the other hand, a small but distinct median tooth is present in the specimens

which I have before me of *sechellarum* Kolbe and *pulchellus* Dejean. It may be that later work has shown that the presence or absence of this tooth is not a reliable generic character, or has in some other way modified the limits of the genus *Siopelus* : but though I have searched the works of several authors, I have not succeeded in finding statements of any such modification, and therefore I do not feel justified in going contrary to Murray's diagnosis of *Siopelus*. The following species are therefore placed under *Hypolithus*, with the reservation that this placing is intended to be only provisional.

32. *Hypolithus pavoninus*, Gerstaecker.

Hypolithus pavoninus Gerstaecker, Arch. Naturg., xxxiii. 1867, i. p. 23 ; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 572.

As stated below, I have seen no named specimen of *H. pavoninus*, and it is with some doubt that I refer to that species a single ♂ from Aldabra : its elytral sculpture is certainly not so fine as in the typical *H. sechellarum* and the elytra are a little longer.

Loc. Aldabra (Voeltzkow) ; ? 1 ♂, 1907 (Thomasset). German East Africa and Mozambique.

33. *Hypolithus sechellarum* (Kolbe).

Siopelus sechellarum Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 17.

I am much indebted to Professor Kolbe for kindly lending me a typical specimen of this species for purposes of comparison. Previously to seeing it I had identified my series as *H. pavoninus* Gerstaecker, of which I have seen no named specimen, and which seems to be very close to *sechellarum*. Professor Kolbe tells me that *sechellarum* is distinguished from *pavoninus* by the somewhat finer sculpture of its elytra, and by having the whole body, and particularly the elytra, shorter. By comparison with the typical specimen, the specimens from the Seychelles, the Amirantes, and Farquhar Atoll, are referred without doubt to *H. sechellarum* : but I am not quite so certain about the specimens from Coetivy, in one of which the elytral sculpture does appear slightly coarser than in the typical specimen.

I have examined the wings of 2 specimens, a ♀ from Mahé and a ♂ from Coetivy, and found them nearly twice as long as the elytra.

Loc. Seychelles : Mahé ; Mamelles, June—July (Brauer) ; 4 ♀, 1908—9. Amirantes: Eagle, 1 ♂, 1 ♀, 1905. Farquhar Atoll : 2 ♂, 4 ♀, 1905. Coetivy : 2 ♂, 2 ♀, 1905.

34. *Hypolithus pulchellus*, Dejean.

Hypolithus pulchellus Dejean, Spec. Col., iv. 1829, p. 181 ; Alluaud, Liste Coléopt., p. 34.

2 specimens ; I am indebted to Monsieur Lesne, to whom I sent one, for the identification. Judging from Dejean's description I think the dark bluish-green colour on the elytra must be extended and the light testaceous colour consequently reduced in these 2 specimens (as compared with those originally described), so that the sutural and lateral dark patches are united with one another.

Loc. Aldabra : 1907 (Thomasset). Cosmoledo : 1907 (Thomasset). Madagascar. Africa ; originally described from Senegal.

DIORYCHE MacLeay, Annul. jav., 1825, p. 21.

35. *Dioryche interpunctata* (Dejean).

Platymetopus interpunctatus Dejean, Spec. Col., iv. 1829, p. 71.

Dioryche interpunctata Alluaud, Liste Coléopt., p. 35; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 572.

8 ♂, 8 ♀. I have made an examination of the *wings* in 5 ♂ and 5 ♀, removing and mounting these organs. In the material thus examined there are two distinct forms, one in which the wings are considerably longer than the elytra, the other in which they are about the same length, or only very slightly longer than, the elytra. The smaller form of wing is also proportionately reduced in breadth: it appears to be in most respects a reproduction of the larger form on a smaller scale*. This dimorphism seems independent of sex or locality; large-winged and small-winged forms occur in both sexes; and in the case of Aldabra, both forms have been obtained in the same island. I can see no external difference in the specimens corresponding to the difference in the wings. In the large-winged forms (2 ♂ from Coetivy, 1 ♂ and 1 ♀ from Aldabra), the length of the elytra varies from $4\frac{1}{2}$—5 mm., that of the wings from $6\frac{1}{4}$—7 mm.: in the small-winged forms (2 ♂ and 1 ♀ from Cosmoledo, 3 ♂ from Aldabra) the measurements are, elytra $4\frac{1}{4}$—5 mm., wings $4\frac{3}{4}$—$5\frac{1}{2}$ mm.

Loc. Aldabra: 1908—9, 3 specimens (Fryer); 1907, 8 specimens (Thomasset); previously obtained by Voeltzkow in 1895. Cosmoledo: 1907, 3 specimens (Thomasset). Coetivy: 1905, 2 specimens. Madagascar, Mascarene Islands, Africa (Senegal, according to Alluaud's "Liste"), India (Coromandel).

STENOLOPHUS Dejean, Spec. Col., iv. 1829, p. 405.

36. *Stenolophus fulvipes*, Erichson.

Stenolophus fulvipes Erichson, Arch. Naturg., ix. 1843, i. p. 216; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 18.

Anisodactylus basicollis Fairmaire, Ann. Soc. ent. France, 1892, Bulletin, p. cli; Alluaud, Liste Coléopt., p. 35; Kolbe, *op. cit.* p. 17.

7 specimens, agreeing so closely with Fairmaire's description of *A. basicollis* that I have very little doubt they are the same, though I have seen no named specimen of that species. As, however, the nature of the mouth-parts made it clear that the species is not an *Anisodactylus*, I sent specimens to Professor Kolbe; he has compared them with the type of *S. fulvipes* Erichson, and has informed me that they belong to that species. The name *Anisodactylus basicollis* must therefore become a synonym of *Stenolophus fulvipes*. I have examined the wings of the two specimens from Mahé, and find them to be about 8 mm., while the elytra are about 4 mm., long.

* It appears that the nervuration of the small form of wing is complete, and that all parts are present though reduced in size. In many flightless Hawaiian Carabidæ, on the contrary, the nervuration is very much reduced and the apical portion of the wing is absent; see Sharp, Fauna Hawaiiensis, vol. iii. pt. III., p. 179 sqq.

Loc. Seychelles: Mahé, 1908—9, 1 specimen from the low country and a second without record of exact locality; previously found by Brauer and Alluaud. Amirantes: Eagle Island, 1905. Comoros, Africa (Mozambique and Angola).

Monsieur Lesne has kindly sent me from the Paris Museum an unnamed specimen labelled "Madagascar, Dr Daullé, 1857"; it is slightly smaller than the other specimens before me, its labrum is lighter (more reddish) in colour, and more transverse in form: in other respects the specimen so closely resembles the series discussed above that I think it must be referred to the same species, *S. fulvipes*.

Tachys Schaum, Naturg. Ins. Deutschlands, i. 1860, p. 743.

37. *Tachys bibulus* (Coquerel).

Bembidium (*Tachys*) *bibulum* Coquerel, Ann. Soc. ent. France, ser. 4, vi. 1866, p. 313.

Tachys bibulus Alluaud, Liste Coléopt., p. 16.

4 specimens, agreeing closely with Coquerel's description except in one point concerning the colour. Coquerel in his diagnosis uses the expression "viridi-æneum, nitidum," and in the description "d'un vert bronzé très brillant." The specimens before me are shining and pitchy-blackish, not bronze-green; but in certain lights they have a slight bronze reflection. In all other respects, in size, form of thorax and elytral striæ, colour and form of light markings on the elytra, etc., they correspond closely with Coquerel's description of *T. bibulus*, to which species I therefore refer them.

Loc. Aldabra; 1908—9, 3 specimens (Fryer). Seychelles; Mahé, marshes on coastal plain at Anse aux Pins, I. 1909, 1 specimen. Réunion, Mauritius, Madagascar.

38. *Tachys seychellarum*, sp. nov. (Pl. **12**, fig. 13).

Sat latus, ovalis, lævis, testaceus, capite elytrisque parum infuscatis, antennis palpisque pedibusque pallidis; prothorace fortiter transverso, elytris conspicue angustiore, postice angustato, angulis posticis fere rectis, lateribus antice angulisque anticis rotundatis; elytris unistriatis, striâ (suturali) ad basin attingente, disco bipunctato, puncto posteriore setigero. Long. corp. $1\frac{1}{4}$ mm.

Form rather broadly oval, smooth, impunctate, testaceous, with head and elytra rather darker, and with antennæ and legs pale. Joints of antennæ short. Head with 2 setigerous punctures on either side just within the eye. Thorax narrower than elytra in its broadest part, and conspicuously so at the base: about $1\frac{1}{2}$ times as broad as long, narrowed behind with sharp posterior angles, with the sides rounded in front and the anterior angles rounded off, with a setigerous puncture on either side-margin a little before the middle and another at each posterior angle. Elytra rather broad, each with only one stria (the sutural), which reaches to the base; disc with 2 punctures (about the region of the 3rd stria, were other striæ present), one rather before the middle of the length, the other about $\frac{1}{4}$ of the length from the posterior end, the posterior one bearing a seta, the anterior one having no seta (though it is possible this is broken off); a marginal puncture at the shoulder and 2 others on the side-margin just behind the shoulder; apex of elytron subtruncate, with a small seta near its outer margin. Wings present. Underside

impunctate, with a few minute hairs on the ventral segments, the terminal segment bearing short minute hairs and 4 longer ones standing in a curved transverse line.

This species belongs to the group of very small light-coloured *Tachys* having only 1 stria on each elytron. I have compared it with several specimens of the S. African species of this group: it is somewhat of the form of *T. humeralis* Pér. and *T. debilis* Pér., *i.e.* somewhat broadly oval as compared with other narrower and more elongate species. But *T. seychellarum* is smaller, and is characterised by having its thorax much narrower at the base than the elytra, whereas in *T. humilis* and *T. debilis* it is not much narrower.

Loc. Seychelles. Mahé: Cascade Estate, between about 800 and 1500 ft., 1909; 1 specimen.

Anillus, Jacquelin-Duval.

Anillus Jacquelin-Duval, Ann. Soc. ent. France, 1851, Bulletin, pp. lxxii and lxxiii; Ann. Soc. ent. France, ser. 2, x. 1852, p. 220; the figures are given in vol. ix. (1851) of the Annales, pl. 13, figs. 25—31.

A single specimen of a very minute, completely blind, and wingless Carabid was found in Félicité Island. Unfortunately it got badly damaged, so that it is impossible to determine the species. I have mounted the specimen in balsam, and an examination of it thus mounted, even in its fragmentary condition, has left very little doubt that it is a species of *Anillus*.

It agrees with the original description and figures (referred to above) of the genus *Anillus* in the following characters:—in general form; in the complete absence of eyes and wings; in the moniliform character of the antennæ; in the possession of a small median tooth by the mentum; in the form of the maxillary and labial palpi, in each of which the penultimate joint is large and swollen while the terminal joint is fine and subulate, and in the case of the maxillary palpi short and very minute; in the shape of the prothorax; and in the form of the elytra, which are elongate and subparallel, completely covering the abdomen (and, as far as can be seen, soldered along the suture and not separately rounded at the apex). It must be mentioned, however, that:—(i) I have been unable to examine the structure of tibiæ and tarsi, owing to the loss of these organs; (ii) the nature of the balsam-mount has not allowed of the form of the mandibles being closely examined; (iii) the labrum appears to have its front margin only very shallowly emarginate (in this respect seeming to be nearer to the closely-allied genus *Illaphanus*), whereas the species of *Anillus* (*A. cæcus*) on which the genus was founded is figured by Jacquelin-Duval (*l.c.*) as having the front margin of the labrum more deeply emarginate. But despite the defects in my comparison, and the difference in form of the labrum, the balance of evidence is strongly in favour of referring the specimen to *Anillus*, and I have little hesitation in doing so.

At first I thought that this specimen was a *Scotodipnus*: but it cannot belong to that genus, as the elytra completely cover the abdomen, whereas in *Scotodipnus* they leave the extremity of the abdomen uncovered, and Schaum (Naturg. Ins. Deutschlands, i. 1860, p. 667) gives this as one of the principal characters on which he separated *Scotodipnus* from *Anillus*.

The occurrence of this blind and wingless genus in the Seychelles is very interesting. It was originally described from France; several European species have been described, and 1 from California: the allied *Illaphanus* was described from Australia. The following is a description of the specific characters of the Seychelles specimen as far as they can be made out.

39. *Anillus* sp.?

Length, just under 1 mm. Form narrow and elongate. Colour pale yellowish-testaceous. Antennæ with joints 1 and 2 large and subturbinate, joint 3 small and subturbinate, joints 4—10 almost spherical, becoming gradually larger towards the apex of the antenna, joint 11 subconical. Prothorax a little broader than long, narrowed behind and subcordate, the anterior angles somewhat rounded, the posterior angles nearly right angles: each posterior angle is seen under a high power to be slightly but quite distinctly emarginate at the actual corner: disc of the thorax appearing smooth and impunctate, but with very high magnification a few extremely minute punctures bearing very short setæ can be seen. Elytra slightly broader than broadest part of prothorax, with sides subparallel, narrowing slightly behind: lateral margins under compound microscope seen to be serrate, more markedly near the shoulders: surface smooth: near the lateral margins are some large circular punctures, from the centre of each of which arises a very long and very fine outstanding seta: there are 3 such in the humeral region and several in the posterior part of the elytron; the longest and most conspicuous setæ on each elytron are (1) the middle of the 3 humeral, (ii) one arising about $\frac{1}{3}$ the length of the elytron from its apex, and (iii) one arising at the posterior extremity of the elytron, some distance from the suture.

Loc. Seychelles. Félicité: from forest, 14—17. XII. 1908.

Note. *Carabid. gen. et sp. indet.*

A single damaged specimen: the absence of the head renders it impossible to fix the genus with certainty, but the remainder of the insect is intact and has the appearance of being possibly a *Stenolophus*. Length (without the head) $3\frac{1}{2}$ mm. Thorax brownish-testaceous, considerably broader than long, slightly narrowed towards the base, with the posterior angles obtuse and rounded; surface impunctate in front, impressed on either side and finely punctured at the base. Elytra at the base a little broader than the base of the thorax, each with 8 striæ continued to the apex and with a very short stria at the base between the 1st and 2nd discal striæ, and with smooth interstices: pitchy or blackish with the 1st interstice testaceous throughout, with a testaceous vitta extending along the 6th interstice, broadening out at the shoulder and behind the middle, and with the lateral margin narrowly testaceous.

Loc. Aldabra (Fryer).

Dytiscidæ.

CANTHYDRUS Sharp, On Dytiscidæ, p. 269.

40. *Canthydrus notula* (Erichson).

Hydrocanthus notula Erichson, Arch. Naturg., ix. 1843, i. p. 220.

Canthydrus notula Sharp, On Dytiscidæ, p. 275; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 574.

Canthydrus biguttatus Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 123, and Bull. Soc. ent. France, 1900, p. 49; Alluaud, Liste Coléopt., p. 62.

Loc. Aldabra: Takamaka, several hundred specimens, 1908 (Fryer); 1895 (Voeltzkow). Widely distributed in Tropical Africa.

LACCOPHILUS Leach, Zool. Miscell., iii. 1817, p. 69.

41. *Laccophilus posticus*, Aubé.

Laccophilus posticus Aubé, Spec. Hydrocanthaires, 1838, p. 428; Sharp, On Dytiscidæ, p. 309; Alluaud, Liste Coléopt., p. 64; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 573.

A large series, about 66 specimens. In many specimens the undulating dark lines on the elytra are interrupted at about $\frac{1}{3}$ of the length from the apex, so that a transverse pale mark, not reaching quite to the suture, is formed: there is considerable variation in the development of this, in some specimens it is scarcely perceptible while in others it is fairly conspicuous. Two ♂ in Dr Sharp's collection (Brit. Mus.) have this pale band very little marked. In the ♂ the abdomen is pitchy-black ventrally except at the base and apex, where it is reddish brown: the 6th segment has its posterior margin sinuate on either side, and is produced in the middle. In the ♀ the abdomen is much lighter in colour ventrally, being reddish-brown throughout, only slightly darker in the middle: the 6th segment is a little less sharply produced in the middle, its posterior margin is slightly sinuate on either side, and there is also sometimes a very small and slight sinuation in the middle.

Loc. Aldabra: "Wilson's Well," Takamaka, x. 1908 (Fryer): 1895 (Voeltzkow). Madagascar and Mauritius.

42. *Laccophilus addendus*, Sharp.

Laccophilus addendus Sharp, On Dytiscidæ, p. 316; Alluaud, Liste Coléopt., p. 63; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 573.

Not obtained by the Percy Sladen Trust Expeditions.

Loc. Aldabra: 1895 (Voeltzkow). Madagascar.

HYDROVATUS Motschulsky, Etud. ent., 1885, p. 82.

43. *Hydrovatus humilis*, Sharp.

Hydrovatus humilis Sharp, On Dytiscidæ, p. 327; Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 107; Alluaud, Liste Coléopt., p. 60.

A single specimen, which agrees with Dr Sharp's type of *H. humilis*: it is darker in colour, the elytra being so dark throughout that the suture does not appear any darker than the rest of the surface. Régimbart (*l.c.*) considers *H. humilis* to be a variety of *H. sordidus* Sharp, which is known from Egypt, Arabia &c.

Loc. Aldabra: "Wilson's Well," Takamaka, x. 1908 (Fryer). Madagascar.

Bidessus Sharp, On Dytiscidæ, p. 344.

I. Species with a distinct sutural stria.

44. *Bidessus thermalis* (Germar).

Hydroporus thermalis Germar, Faun. Ins. Eur., 20. 3.

Bidessus thermalis Sharp, On Dytiscidæ, p. 353; Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 85.

11 specimens, varying in length between 1·5 and 1·9 mm. They are of a rather small form, apparently approaching somewhat to the var. *signatellus* Klug. There is some variation in colour; the dark marks at the base of the pronotum and elytra are almost absent in some specimens; the inner dark band on the disc of the elytron is always characteristically dilated outwards in the form of a hook at its posterior extremity and in its anterior part is sometimes confluent with the shorter outer band, sometimes distinctly separated from it. Ventrally the sterna and posterior coxæ are ferruginous, while the abdomen excepting at its extreme base and apex is much darker.

Loc. Chagos Islands: Diego Garcia, 1905: 8 of the specimens are labelled by T. B. Fletcher "9. VII. 05. In stagnant pool in Barachois." The species is known in various forms from S. Europe, N. and W. Africa, Egypt, Arabia, Persia, and Bengal.

45. *Bidessus capitatus*, Régimbart.

Bidessus capitatus Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 83; Alluaud, Liste Coléopt., p. 59. (Pl. **12**, fig. 14.)

Var.? 57 specimens from Aldabra. Length from just under 2 to $2\frac{1}{5}$ mm. Head and prothorax reddish-fulvous, the former infuscate behind and along the inner margins of the eyes, the latter very narrowly darker along its front margin, broadly darkened behind between the plicæ. Head with a slight transverse elevation at the base of the clypeus, finely punctured: pronotum with fine and rather numerous punctures, stronger towards the base: plicæ oblique continued on to the elytra as slightly longer grooves. Elytra rather densely and rather strongly punctured, with fine pubescence; fuscous, with the following pale (yellowish-testaceous) markings: the lateral margin, which is sometimes divided behind the middle by an elongated dark mark and triangularly dilated at the apex; two longitudinal vittæ on the front part of the disc, neither of them reaching the base, the inner usually shorter and ending posteriorly before the middle of the elytron, the outer longer and ending behind the middle of the elytron: these longitudinal pale vittæ are connected in front with one another and with the lateral margin by a transverse pale vitta running obliquely from the shoulder to near the sutural stria. The sutural area, between the sutural stria and the suture, is dark throughout its length: it, and

more especially the basal area, appear as the darkest parts. The light and dark areas are not nearly as strongly contrasted as in some species, as most of the fuscous parts of the disc are not very dark. There is some variation, but the most usual arrangement is shown in Pl. **12**, fig. 14. Ventrally the insect is black.

The specimens from which the above description is taken differ so little from Régimbart's description of *B. capitatus*, that I have very little doubt that they are a form of that species, though I have seen no named specimens of it. The chief difference appears to be in size: Régimbart gives the length as $1\frac{3}{4}$—$1\frac{4}{5}$ mm. (slightly smaller than *B. geminodes* Rég., *op. cit.* p. 88), whereas the specimens before me vary between just under 2 and $2\frac{1}{5}$ mm. (as large as, or slightly larger than, *B. geminodes*). Régimbart uses the words "pedibus antennisque flavis," while in these specimens the feet and antennæ are more reddish, or *fulvous*. He compares *B. capitatus* closely with *B. geminodes*: I have seen a specimen of *B. geminodes* (var. *zanzibarensis*) named by him, and examined it side by side with specimens from the series under consideration, when some of the differences mentioned by him as existing between the two species are apparent. In *B. geminodes* there is no transverse ridge right across the head at the base of the clypeus: the two longitudinal pale vittæ on the front part of each elytron are entirely separated from one another and from the lateral margin, whereas in *B. capitatus* they are united in front to it and to one another by the oblique transverse vitta described above. There are variations in arrangement of light and dark markings, but this last character is maintained throughout, and it is this oblique vitta which gives to *B. capitatus* its characteristic elytral pattern as contrasted with that of *B. geminodes* etc.

Loc. Aldabra: Takamaka, X. 1908 (Fryer). Madagascar, near Diego Suarez (Alluaud).

46. *Bidessus farquharensis*, sp. nov. (Pl. **12**, fig. 15).

Ovalis, sat convexus, elytrorum lateribus regulariter curvatis, nitidus, pedibus antennisque flavis, his apice parum infuscatis; capite flavescente, postice et ad oculos infuscato, tenuissime punctulato, utrinque ad basin clypei parum impresso; pronoto flavo, antice sat anguste, ad basin inter plicas late nigricante, in medio sparse, antice posticeque crebrius punctato, punctis ad basin fortioribus, plicis obliquis in elytris breviter angulariter continuatis; elytris sat fortiter haud dense punctatis, tenuissime pubescentibus, striâ suturali profundâ ad basin fere attingente, nigricantibus, margine laterali flavo antice late, pone medium parum, apice triangulariter dilatato, vittisque 2 longitudinalibus flavis basin haud attingentibus et paulo ante medium abbreviatis: subtus sternis coxisque posterioribus obscure rufescentibus, abdomine nigricante. Long. corp. circa 2 mm.

Characterised by the rather convex oval form, the sides not being parallel but curved: the thoraco-elytral angle is distinct but slight, the elytra are ampliated in their middle part and their sides are gradually curved from base to apex. Also characterised by the rather shining surface, the rather wide spacing-out of the elytral punctuation, and the strong contrast of the light and dark markings, the former being yellow and the latter almost black. There is no transverse ridge across the head at the base of the clypeus, but only a slight depression on either side. The thoracic plicæ are curved

slightly inwards, and are continued on to the elytra as grooves of about the same length as the thoracic portion. Sutural stria deep, reaching the apex, but not quite to the base. Surface finely reticulate. Each elytron (Pl. **12**, fig. 15) is almost black with the following yellow markings: (i) the lateral margin, broadly dilated in its front part, slightly dilated behind the middle (this second dilation being sometimes rather vaguely cut off from the rest of the margin by a dark line), and triangularly dilated at the apex: and (ii) two longitudinal vittæ on the front part of the disc, not reaching the base and ending a little in front of the middle, quite separated from the lateral margin by an intervening dark area, but in one specimen confluent with each other at one point.

This species could not be identified with any in the British Museum collections, nor does it appear to agree entirely with any of Régimbart's descriptions. The colour-pattern of the elytra is of a similar type to that found in several other species, though the colours themselves may be different. This pattern is of the same type as that of *B. geminodes* Rég., though that species is extremely different in form, colour, and punctuation: judging from the description it is also similar to that of the W. African *B. africanus* Rég. (Mém. Soc. ent. Belgique, iv. 1895, p. 90), but here again the colour itself of the elytra is described as "d'un brun nébuleux," the species is smaller, and there are probably many other differences. In another case the figure and description (in Ann. Soc. ent. France, lxviii. 1899, p. 224) of a species from the Philippines, *B. pseudogeminus* Rég., show that the pattern is the same; here too, according to the description, the colours themselves appear to be fairly similar to those of *B. farquharensis*, but the form of the insect is described as "oblongue, subparallèle." All things considered I have felt it necessary to name and describe this species, while recognising that, were it possible to see specimens of all described species, it might prove to be a form of some one of them.

Loc. Farquhar Atoll: 5 specimens, 1905.

II. Species with no sutural stria.

47. *Bidessus peringueyi*, Régimbart.

Bidessus peringueyi Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 84: Ann. Soc. ent. France, lxxv. 1906, p. 244.

Bidessus sechellensis Régimbart, Bull. Soc. ent. France, 1897, p. 208; Alluaud, Liste Coléopt., p. 60.

B. sechellensis was described as a distinct species, but Régimbart afterwards (1906) found it to be the same as *B. peringueyi*. I have examined specimens of *B. peringueyi* named by Régimbart in the British Museum: it is a very small species belonging to the group with no sutural stria, and was not obtained by the Percy Sladen Trust Expeditions.

Loc. Seychelles: La Digue, 1892 (Alluaud). Madagascar, E. and S. Africa.

48. *Bidessus sp.*

A single specimen of a very small species. It is quite distinct from *B. peringueyi* Régimbart, being strongly punctured on the elytra. It does not appear to agree with any species in Dr Sharp's collection or elsewhere in the British Museum, but I am

uncertain whether it may not be referable to some species which I have not seen, and have therefore thought it best not to describe it as new.

The length is about 1·5 mm. Form somewhat narrow and elongate-oval, thoraco-elytral angle slight. Shining; head, prothorax, antennæ and legs reddish-testaceous; elytra brown, without distinct markings and almost concolorous, slightly darker at the base and along the suture, and paler at the shoulders. Head finely punctulate with a slight elevation on either side at the base of the clypeus; pronotum finely and not closely punctured, the punctures stronger at the base, the plica on either side well-marked and angular, continued on to the elytron as a groove of about the same length; elytra fairly strongly and closely punctured, with excessively short and scanty pubescence (scarcely visible except with a compound microscope); sutural stria absent, replaced by a line of punctures. Beneath, ferruginous with posterior coxæ and base of abdomen infuscate: posterior coxæ strongly but not very closely punctured.

Loc. Aldabra: "Wilson's Well," Takamaka, X. 1908 (Fryer).

HYPHYDRUS Illiger, Mag., i. 1802, p. 299.

49. *Hyphydrus impressus*, Klug.

Hyphydrus impressus Klug, Ins. Madag., Abh. Ak. Wiss. Berlin, 1832, i., p. 136; Sharp, On Dytiscidæ, p. 380; Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 57; Alluaud, Liste Coléopt., p. 58; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 574.

6 specimens. There is a great development of the light markings on the elytra: this species is very variable in that respect, a specimen from Madagascar in Dr Sharp's collection having the middle and posterior parts of the elytra almost entirely dark. Régimbart (*l.c.*) mentions that certain specimens from Boma (Congo) were very dark, some even having the elytra "entièrement noirs, sauf une étroite bordure humérale."

Loc. Aldabra: "Wilson's Well," Takamaka, X. 1908 (Fryer); 1895 (Voeltzkow). Madagascar, Mascarene Islands, W. and S. Africa.

COPELATUS Erichson, Gen. Dytisc., 1832, p. 38.

50. *Copelatus gardineri*, sp. nov.

♂♀. Elongato-ovalis, angustus, nigro-piceus, capite prothoracisque marginibus lateralibus rufescentibus, elytris vittâ basali transversâ angustâ ad suturam vix interruptâ humerosque fere attingente, et maculâ subapicali, testaceis; corpore subtus rufo-piceo, antennis pedibusque testaceis plus minusve infuscatis; capite prothoraceque pertenuissime punctulatis, hoc utrinque ad basin plus minusve obsolete striolato; elytris pertenuissime haud dense punctulatis, striis nullis, seriebus punctorum duabus distinctis, et duabus aliis minus distinctis, postice serie submarginali punctorum tenuiter pubescentium. Long. corp. $4\frac{3}{4}$—$5\frac{1}{2}$ mm.

♂ tibiis anticis ad basin curvatis intusque emarginatis, tarsorum anticorum mediorumque articulis 1—3 dilatatis et articulis ultimis parum elongatis.

Elongate, narrow, moderately convex, extremely finely reticulate and extremely finely but not closely punctulate; pitchy-black, with head and sides of thorax reddish, with

a narrow yellowish-testaceous vitta across the base of the elytra, including the scutellum and scarcely interrupted at the suture, narrowing at its outward extremities and not reaching quite to the shoulders, and with a subapical testaceous mark on each elytron; body beneath dark reddish-pitchy, antennæ and legs testaceous, the posterior legs darker. Head with two punctate impressions on either side near the eye. Thorax with a group of fine punctures or punctiform striolæ on either side near the base, this sculpture varying but never very strongly developed: the thorax is also slightly impressed on either side in the region of this sculpture. Elytra with no striæ, but with 2 distinct though interrupted series of punctures, consisting of little lines of fine punctures with gaps between them: between these two series and between the outer one and the side-margin respectively, are two other much less distinct series, more interrupted and often hard to see, the inner one consisting often of isolated punctures separated by rather long intervals. In the posterior part of the elytron there is a submarginal series of punctures bearing fine pale hairs; in some specimens the punctures of the discal series also bear some similar hairs, as also do the punctures of the transverse row which (as in various other species of the genus) runs across the prothorax just behind its front margin: but in most specimens these hairs are absent, being probably worn away. The posterior coxæ and anterior abdominal segments are striolate laterally. In the ♂ the terminal joints of front and middle tarsi are slightly longer than in the ♀: other ♂ characters are given in the diagnosis.

This species belongs to Group I. of the genus, having no striæ on the elytra. Judging from the descriptions it seems to be allied to the Madagascar species *C. regimbarti* and *C. apicalis*, Fairmaire (Ann. Soc. ent. Belgique, xlii. 1898, p. 464), but is evidently distinct: *C. regimbarti* has a transverse basal vitta and a subapical mark on each elytron, but is much larger and is described as "fuscus" instead of black: *C. apicalis* is about the same length as *C. gardineri*, but has only a minute humeral mark instead of a transverse basal vitta, and differs too in other respects. Having seen no specimens I cannot be sure whether either of these species is really close to *C. gardineri* or not. *C. gardineri* is not very close to any species which I have seen in Dr Sharp's or other collections in the British Museum.

35 specimens. It is the only water-beetle which I ever found in any numbers in the mountain-streams of Seychelles. As far as my experience goes it is found not so much in the swiftly-running parts of the streams (which have prawns and crabs in them), as in more stagnant parts where the streams spread out on more level ground, such as the Silhouette Mare aux Cochons, into pools and small swamps. It was found in such places at elevations up to 1000 feet or over. I have dedicated it to Professor J. Stanley Gardiner, by whom it was first found in 1905.

Loc. Seychelles. Praslin: 1905, 5 specimens. Silhouette: Mare aux Cochons plateau, VIII—IX. 1908, 16 specimens. Mahé: from a swampy hollow near Morne Blanc, X. 1908, 14 specimens.

51. *Copelatus pandanorum*, sp. nov. (Pl. **12**, fig. 16).

♂♀. Oblongo-ovalis, depressus, ferrugineus vel interdum piceus: capite pronotoque persubtilissime punctulatis, hoc utrinque ad basin plus minusve striolato: elytris

subtilissime crebreque, ad apicem parum fortius, punctulatis, striâ submarginali antice valde abbreviatâ, disco striis tribus integris et duabus incompletis; 2 et 4 et 5 basin attingentibus fereque ad apicem continuatis; 1 et 3 solum ad apicem indicatis, in parte anteriore tote deletis, variabilibus, sæpius interruptis, interdum fere obsoletis. Long. corp. circa 5 mm.

♂ tibiis anterioribus ad apicem dilatatis, ad basin curvatis intusque emarginatis, tarsorum anteriorum et mediorum articulis 1—3 dilatatis.

Oblong-oval and depressed: unicolorous, ferruginous, or sometimes much darker, in which case the head and thorax are pitchy-ferruginous and the elytra pitchy. Surface very finely and minutely reticulate. Head extremely finely punctured, on either side towards the eye often more or less impressed and with 2 or 3 small groups of stronger punctures. Thorax with some punctiform striolæ on either side near the base; this sculpture varies greatly, being sometimes very little developed, in other cases covering an area reaching almost to the front margin, the variation apparently independent of sex (the sculpture being well-developed in some males): the thorax has also sometimes a slight impression near the base on either side of the middle. Elytra with numerous very fine punctures, more marked towards the apex: submarginal stria ending behind some distance before the apex, and abbreviated in front at about $\frac{1}{3}$ the length of the elytron from the base: disc with 5 striæ, but frequently appearing only 3-striate owing to the great reduction of nos. 1 and 3; these are present only in the posterior part of the elytron, varying in length, the front end of no. 1 being usually some distance behind the middle of the elytron while that of no. 3 is nearer the middle; they end behind a little before the apex, and are frequently interrupted in a number of places so that they often consist of a number of separate short lines, and in some cases one of them (especially no. 1) may be almost entirely absent: nos. 2, 4 and 5 are very distinct, starting from the base of the elytron and being continued throughout its length, nos. 2 and 4 being abbreviated a very little before, and no. 5 some way before, the apex; no. 5 curves slightly towards the lateral margin just behind the base. Wings examined in 1 male and 1 female, found to be $5\frac{1}{2}$ mm. long, while the length of the elytron is $3\frac{3}{4}$ mm. Underside ferruginous, the posterior coxæ and first four abdominal segments bearing striolæ at the sides, those on the coxæ being longitudinal in direction and those on the segments curving inwards towards the middle line. Male characters of the tarsi etc. are given in the diagnosis.

The habitat of this species is very remarkable. The series before me consists of 17 males and 20 females, all of which, without exception, were found living in the water that collects between the bases of the leaves of certain precinctive species of screw-pine* (*Pandanus*), many feet above the ground. They were found only in the endemic high damp mountain-forests, in situations where the water between the leaves would never under ordinary circumstances dry up. In one case two larvæ, having a quite characteristic Dytiscid facies, were also found between the leaves, showing that in all probability the whole life-cycle takes place in this curious habitat. There was also very frequently found with the Dytiscids another kind of larva, sometimes as much as 20 mm. long, elongated and somewhat depressed, with a smooth dark hard integument, with the body

* In all cases where there is an exact record of the species of *Pandanus*, it is *P. Hornei*: but I cannot be certain that a few of the specimens are not from *P. sechellarum*.

ending in a sharp acuminate process, and with apparently biforian spiracles. This larva has somewhat the facies of an Elaterid larva; but it is quite uncertain to what beetle it belongs, or why it should be continually found accompanying the *Copelatus* between the *Pandanus* leaf-bases. I have thought it best to mention it here, while hoping that a full description of it and of the *Copelatus*-larva may be given in a later part of this work. With regard to the curious habitat of *Copelatus pandanorum*, it is interesting to compare the cases of *Oxyomus palmarum* and *Atænius lodoiceæ* (*supra*, pp. 225, 226), and the summary of facts concerning creatures found between bases of leaves of palms and *Pandani* in my introductory paper (Trans. Linn. Soc. London, ser. 2 (Zool.), Vol. xiv. 1910, pp. 24—5). The species was first found in 1905 by Professor Gardiner, and the rest of the material was obtained by myself in 1908: details are given below.

Loc. Seychelles. Silhouette: from leaf-bases of two growing trees of *Pandanus Hornei* in forest above Mare aux Cochons, 22. IX. 1908, 8 ♂, 13 ♀, and two larvæ (No. 35 *a*). Mahé: from leaf-bases of growing *Pandanus*, near Morne Blanc, X—XI. 1908, 3 ♂ and 3 ♀, all very darkly-coloured except one (No. 91); also 2 ♂ and 1 ♀ collected in 1905 (Gardiner). Praslin: from leaf-bases of *Pandanus Hornei* in jungle on Côtes d'Or Estate, 30. XI. 1908, 4 ♂, 3 ♀ (No. 342).

52. *Copelatus pulchellus* (Klug).

Agabus pulchellus Klug, Symb. phys., iv. 1834, pl. xxxiii., fig. 7.

Copelatus pulchellus Sharp, On Dytiscidæ, p. 583; Alluaud, Liste Coléopt., p. 66; Régimbart, Bull. Soc. ent. France, 1900, p. 50; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 574.

Régimbart has described (*l.c.*) the Aldabra form of this insect, and the 4 males and 4 females before me correspond with his description. It is a small form—the specimens in question being about 5 mm. long—and the female has the thorax and elytra almost entirely covered with a dense sculpture of deep striolæ which on the elytra undulate and anastomose. The species is very variable in this respect, some females being entirely destitute of striolæ, and some having only the lateral part of each elytron striolate (see Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 164).

Loc. Aldabra: Takamaka, some at light, X—XII. 1908 (Fryer): 1895 (Voeltzkow). Madagascar; E., W., and S. Africa.

Hydaticus Leach, Zool. Miscell., iii. 1817, p. 69.

53. *Hydaticus leander* (Rossi).

Dytiscus leander Rossi, Faun. Etrusc., i. 1790, p. 202.

Hydaticus leander Sharp, On Dytiscidæ, p. 662; Alluaud, Liste Coléopt., p. 68; Kolbe, Mitt. Zool. Mus. Berlin, v. 1910, p. 19.

3 ♂ from Coetivy. In 2 the thorax is reddish-brown, narrowly darker along the posterior margin: in the third it is much darker, all the middle portion being dark, and the head also is much darker than in the two other specimens.

Loc. Coetivy, 1905. Seychelles; La Digue, 1892 (Alluaud). Distribution very wide; S. Europe, Syria, Africa and Cape Verde Islands, Madagascar.

ERETES Castelnau, Ann. Soc. ent. France, i. 1832, p. 397.

54. *Eretes sticticus* (Linnæus).

Eretes sticticus (Linn.); Sharp, On Dytiscidæ, p. 699; Régimbart, Mém. Soc. ent. Belgique, iv. 1895, p. 208; Linell, Proc. U. S. Mus., xix. 1897, p. 698; Alluaud, Liste Coléopt., p. 70; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 573.

1 male and 3 females: they have a rectangular dark patch, emarginate in front, on the vertex; the transverse dark thoracic band is short and not divided in the middle; the general colouring of the elytra is dark, and the postmedian dark band is not strongly marked; the elytral fossa of the ♀ is rather long. They appear therefore to approach near to the var. *helvolus* Klug. The length is about 13—15 mm.

Loc. Aldabra: 1908—9 (Fryer); 1895 (Voeltzkow), 1893 (Abbott). Cosmopolitan.

CYBISTER Curtis, Brit. Ent., iv. No. 151, 1827.

55. *Cybister tripunctatus* (Olivier).

Dytiscus tripunctatus Olivier, Ent., iii. 40. 1795, p. 14, pl. 3, fig. 24.

Cybister tripunctatus Sharp, On Dytiscidæ, p. 727; Linell, Proc. U. S. Mus., xix. 1897, p. 699; Alluaud, Liste Coléopt., p. 72; Kolbe, Abh. Senckenb. Ges., xxvi. 1902, p. 572.

10 males and 3 females from Aldabra agree with Kolbe's description (*l.c.*) of the subsp. *aldabricus* in having the yellow border of the same width as in the subsp. *africanus*, in being smaller (ca. 25 mm. long) than most specimens of that subspecies, in being somewhat short, and having the elytra rather conspicuously broadened behind the middle. 2 of the females, however, exhibit an excessively fine, but under a powerful lens quite distinct, sexual sculpture on the basal portion of the elytra: in this respect they approach the condition found in the Madagascar form *cinctus* (Sharp) and in some specimens in the British Museum from the Mascarene Islands. Kolbe states that in the Aldabra females examined by him and included in the subsp. *aldabricus*, there is no sexual sculpture in the ♀, which thus approaches nearer to the form *africanus*.

Loc. Aldabra: Takamaka, 1907 (Thomasset); 1908—9 (Fryer); 1895 (Voeltzkow), 1893 (Abbott). Distributed in various forms over S. Europe, Africa, Madagascar and Mascarene Islands, and S. and E. Asia to Australia.

EXPLANATION OF PLATE 12.

Fig. 1. *Oxyomus palmarum*, sp. nov.
Fig. 2. *Atœnius lodoiceæ*, sp. nov.
Fig. 3. *Nesohoplia senecionis*, gen. et sp. nov.
Fig. 4. „ „ „ „ „ labrum.
Fig. 5. „ „ „ „ „ mandible.
Fig. 6. „ „ „ „ „ maxilla.
Fig. 7. „ „ „ „ „ labium.
Fig. 8. „ „ „ „ „ tarsal claws, ♂.
Fig. 9. „ „ „ „ „ tarsal claws, ♀.
Fig. 10. *Adoretus versutus* Harold, claws of middle tarsus of ♂; *a*, dorsal view of end of bigger claw, drawn to larger scale, showing cleft.
Fig. 11. „ „ „ claws of middle tarsus of ♀.
Fig. 12. „ „ „ end of ædeagus; *a*, dorsal; *b*, ventral view.
Fig. 13. *Tachys seychellarum*, sp. nov.
Fig. 14. *Bidessus capitatus* Régimbart, var.?, elytron.
Fig. 15. *Bidessus farquharensis*, sp. nov., elytron.
Fig. 16. *Copelatus pandanorum*, sp. nov., ♀.